REPORT OF

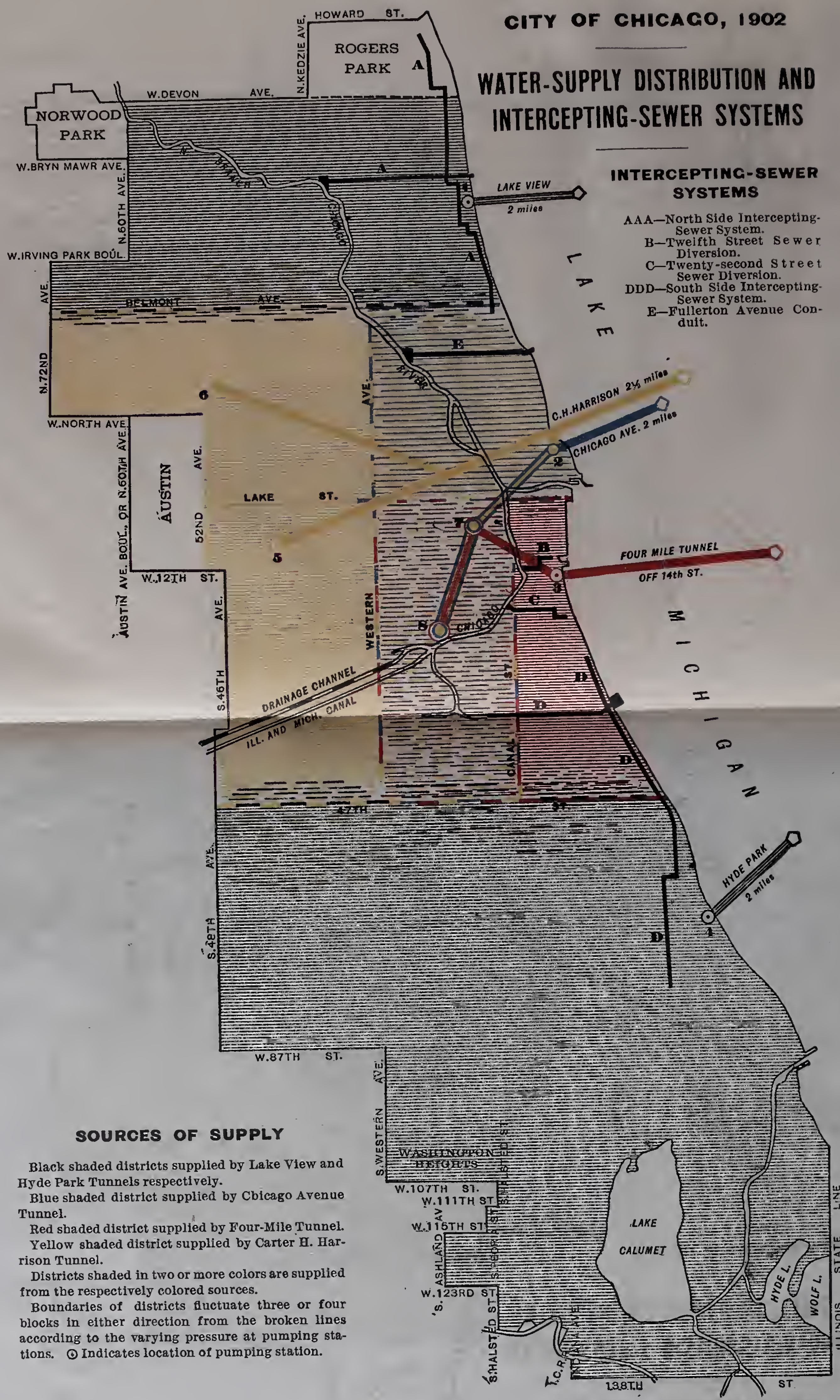
STREAMS EXAMINATION

SANITARY DISTRICT
OF CHICAGO

Presented by
A. R. Reynolds. M.D.
June 1903

CITY OF CHICAGO, 1902

WATER-SUPPLY DISTRIBUTION AND INTERCEPTING-SEWER SYSTEMS



INTERCEPTING-SEWER SYSTEMS

AAA—North Side Intercepting-Sewer System.
B—Twelfth Street Sewer Diversion.
C—Twenty-second Street Sewer Diversion.
DDD—South Side Intercepting-Sewer System.
E—Fullerton Avenue Conduit.

SOURCES OF SUPPLY

Black shaded districts supplied by Lake View and Hyde Park Tunnels respectively.

Blue shaded district supplied by Chicago Avenue Tunnel.

Red shaded district supplied by Four-Mile Tunnel.

Yellow shaded district supplied by Carter H. Harrison Tunnel.

Districts shaded in two or more colors are supplied from the respectively colored sources.

Boundaries of districts fluctuate three or four blocks in either direction from the broken lines according to the varying pressure at pumping stations. ⊙ Indicates location of pumping station.

REPORT

OF

STREAMS EXAMINATION

Chemic and Bacteriologic

OF THE

Waters between Lake Michigan at Chicago and the Mississippi River at St. Louis, for the purpose of determining their condition and quality before and after the opening of the Drainage Channel

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MADE UNDER THE DIRECTION OF

ARTHUR R. REYNOLDS, M. D.
Commissioner of Health, City of Chicago

PUBLISHED BY AUTHORITY OF

THE TRUSTEES OF THE SANITARY DISTRICT OF CHICAGO

December, 1902

PRESS OF
THE BLAKELY PRINTING COMPANY
CHICAGO

LETTER OF TRANSMITTAL FROM THE DIRECTOR OF THE STREAMS EXAMINATION.

Chicago, December 1, 1902.

To the Honorable, the Board of Trustees, Sanitary District of Chicago.—Gentlemen:—In presenting to you the subjoined reports of the bacteriologic and chemical experts on the effects of the Sanitary Drainage Channel on the waters of the streams between Chicago and St. Louis, I beg to call your attention to the facts, which, in my judgment, seem to be demonstrated in these reports.

For the general reader it should be premised, first, that the immediate object of the Chicago Sanitary District, created under the Act of May 29, 1889, is the diversion from Lake Michigan of the sewage of Chicago and its inoffensive disposal toward the Mexican Gulf. These are the primary and all-important purposes of the expenditure of the $36,000,000: To prevent the further pollution of the waters along the city front and to relieve the filth-congested river and its branches, the contents of which have been aptly described as "the quintessence of seweral putridity," and to do this without offense to the senses or injury to the health of the communities further down stream—communities which have long suffered from the relatively insignificant sewage discharge through the Illinois and Michigan Canal.

Second, and as a corollary of this first premise, the protection, *pro tanto,* of the Chicago water supply from pollution by this sewage.

Third, the reclamation of the "malaria preserves" along the Illinois river, to the benefit of the public health of those regions.

And, ultimately, the improvement of navigation between Lake Michigan and the Mississippi river.

The inception of this work dates back nearly half a century—to the days of E. S. Chesebrough, one of the best-equipped and most far-seeing sanitary engineers of his period, and during the interval it has received the attention and study of such sanitarians and scientists as Dr. John H. Rauch (for fully thirty years), Prof. John H. Long, Dr. F. W. Reilly, Allen Hazen, Rudolph Hering, Geo. E. Waring, Jr., W. T. Sedgwick, John W. Hill, Lyman E. Cooley, Benezette Williams, S. G. Artingstall and others.

Of the facts demonstrated in the report, your attention is especially invited to that which shows that running streams, adequately diluted, do purify themselves from sewage pollution—a proposition first made by Dr. Reilly as a result of his collation of the reports of Prof. Long's investigations of the water supplies of Illinois, 1888-89, and at a time when water analysts of the old school held that "no stream on earth is long enough to purify itself after once being organically polluted." The demonstration is shown in the complete disappearance of any trace of Chicago sewage in the Illinois river long before it reaches Averyville and in the better quality of the Illinois river water as it empties into the Mississippi at Grafton than that of the Mississippi itself.

All talk of Chicago sewage injuriously affecting the drinking water at St. Louis is thus completely and effectually disposed of by the work of these investigators.

The benefit of the Sanitary waterway on the public water supply has not yet been fully realized, and will not be until the intercepting sewers and other works necessary to the exclusion of all sewage from the lake in the vicinity of Chicago are completed. But what may be confidently anticipated is foreshadowed in the great improvement of the sanitary quality of the water supply, under usual meteorologic conditions, since the Channel was opened in January, 1900.

As to the improvement of the river and the south branch, no one who crosses a bridge from Rush street to Robey, or who lives, works or offices in the vicinity of the main river and south branch, can fail to notice the change in the atmosphere since that date.

Concerning the benefits along the Desplaines and Illinois rivers, the State Fish Commissioner, Col. Bartlett, reports an enormous increase in the fish harvest—a crop more remunerative, acre for acre, than any other in the state. Fish that have been driven away from increasing reaches of the river year by year by the undiluted sewage of the Illinois and Michigan Canal and of the larger towns below Chicago are returning to the purified waters, and the denizens along the banks of the Illinois, erstwhile hostile to the Sanitary District, are now clamoring for the fullest flow of the channel in the interest of improved navigation.

As part of the history of the Sanitary District, I incorporate in this letter of transmittal the correspondence and other data pertaining to the streams examination of which I have had the honor of being the Director. This begins with the following:

Chicago, November 28, 1898.

To the Honorable, the Board of Trustees,
Sanitary District of Chicago.

Gentlemen:—I take occasion again to urge—as I have previously done verbally to some of the Trustees—the desirability of an exhaustive series of examinations, chemic and bacteriologic, of the waters between Lake Michigan at Chicago and the Mississippi River at St. Louis, with the object of determining their condition and quality before the completion of the Drainage Channel, for comparison with their condition and quality under the dilution to be afforded by the Channel.

SCHEMATIC REPRESENTATION

of the

Self-Purification of the Waters

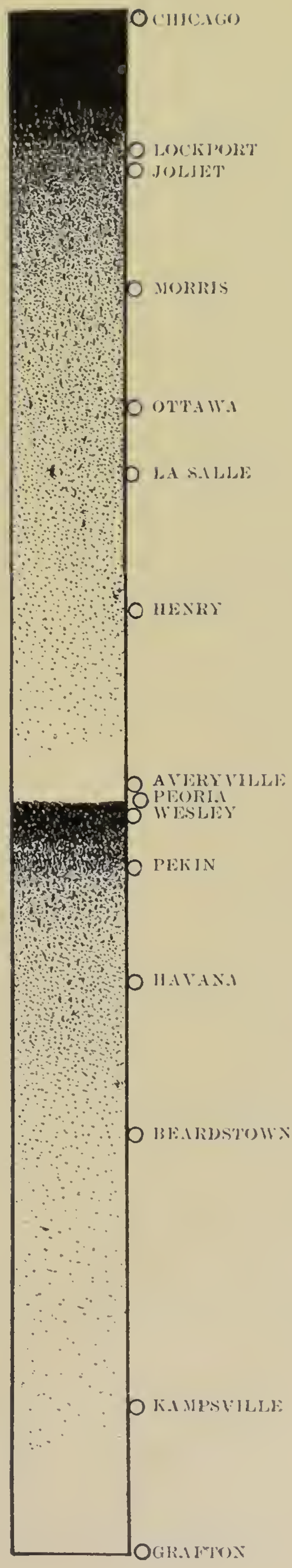
between the entrance of the

Main Drainage Channel at Chicago

and the

Mississippi River at Grafton

Based upon Tables of Bacteriologic and Chemic Examinations.
1900-1901



Such examinations have been made from time to time since 1869—the most important, in point of number, being those instituted by the late Dr. John H. Rauch in 1886-89, made by Professor J. H. Long and collated by Dr. F. W. Reilly. While these examinations demonstrated the effective decomposition of sewage matters, and consequent purification of the streams in a flow of less than fifty miles—that is, between Bridgeport and Channahon—they are defective, scientifically, in that they were confined solely to the chemic determinations, and in the present developed state of water analysis and examination, when water bacteriology is deemed essential, they would probably have little weight.

This defect was, in part, remedied by the work done under my direction as late as September, 1894, by Dr. Adolph Gehrmann, of the Department Laboratory, who made a special bacteriologic study of certain organisms in the waters between the South Branch of the Chicago River and a point a few miles below Peoria. But this work was confined to the bacterial examinations, and was not supplemented by simultaneous chemic analyses. As before said, both are essential.

I beg to submit that, in view of the hostile attitude of St. Louis and the threat to appeal to Federal authority to prohibit the use of the Drainage Channel, the Board should fortify itself with the evidence above indicated.

The outlay for this work need not be great, since the Board could undoubtedly arrange with the Illinois University to have the analyses and examinations made in its laboratories, without charge, and the findings would thus have the prestige, as evidence, of a state institution, and the weight of such authorities as Professor Palmer and his colleagues.

To further forestall criticism, I would suggest that duplicate samples should be offered to the St. Louis authorities for examination in some such institution as their Washington University, whose scientific standing is of the highest. It would be well, also, to secure the service of the laboratories of the Chicago University, in which Professor Jordan and others have already done a great amount of work on the general subject.

If this suggestion be acted upon, I should be glad, if desired, to take general charge and arrange with the representatives of the three institutions the details of the collection of samples, the points whence these shall be obtained, the technique to be employed in the examinations, the data to be included—meteorologic, topographic, demographic, etc.

My suggestion is based on the assumption that the opposition to the Drainage Channel has an honest animus; that St. Louis and the lower Illinois valley really believe that the effect of the Channel will be inimical to their health by affecting their water supplies. The way to remove these fears and allay these apprehensions is to ascertain and present the facts truthfully and impartially. I have no doubt as to the result—either as to the certainty of demonstrating a material improvement of the quality of the water by the Channel dilution, or as to the prompt acceptance of the situation by those now opposed when such demonstration has been made. I am, gentlemen, Very truly yours,

(Signed) ARTHUR R. REYNOLDS. M, D.,
Commissioner of Health.

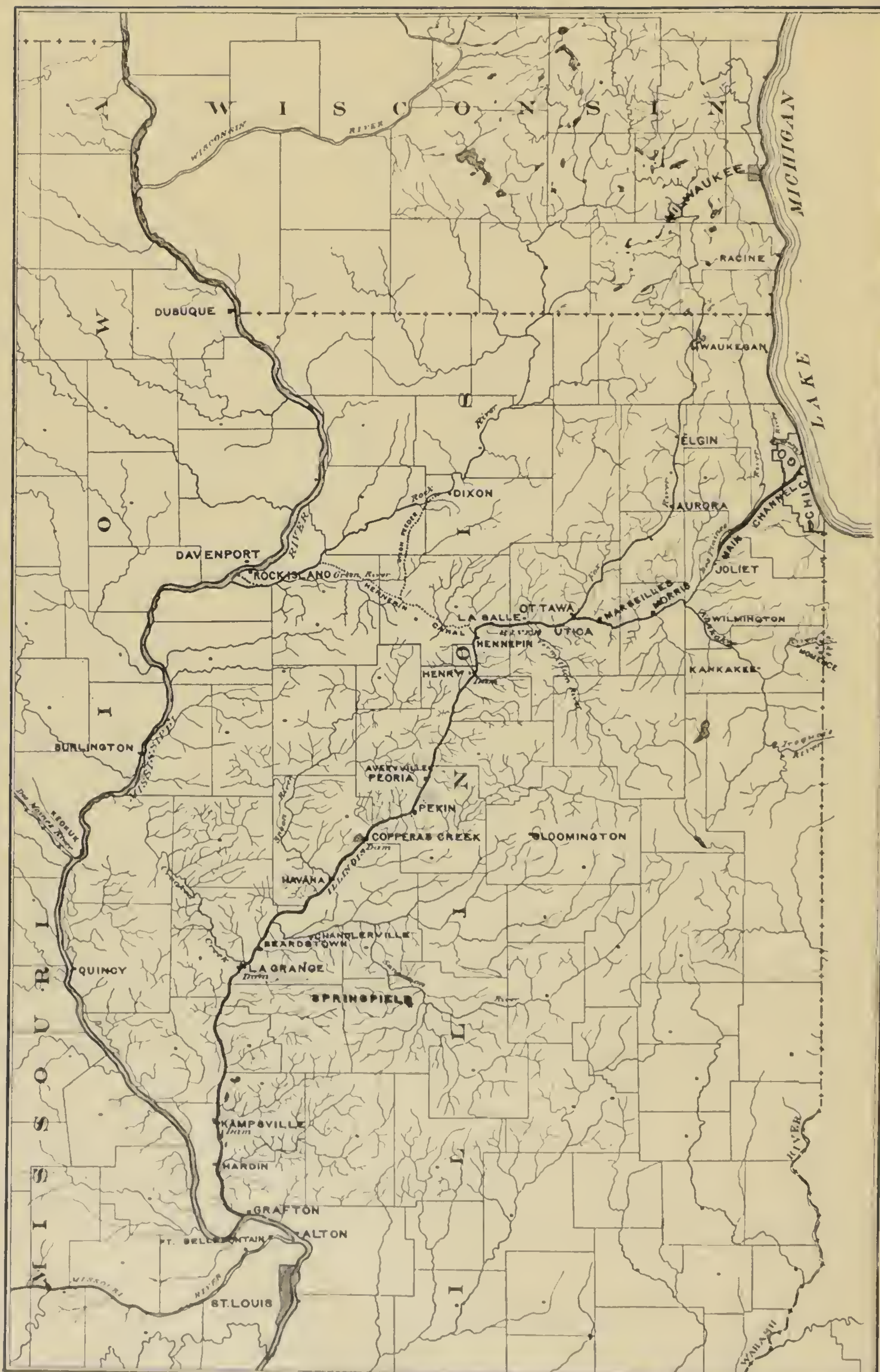
After due consideration the suggestions made in the above letter were adopted, and the following notification of appointment was received January 24, 1899:

SANITARY DISTRICT OF CHICAGO.

Chicago, January 23, 1899.

Arthur R. Reynolds, M. D., Commissioner of Health,
City Hall, Chicago.

Dear Sir:—You are hereby notified that the Joint Committee on Federal Relations and Health and Public Order of the Sanitary District of Chicago has selected



MAP OF ILLINOIS RIVER

you, in your official capacity, to take the preliminary steps, under the direction of said Joint Committee, in regard to analyses of the water of the Chicago, the Desplaines, the Illinois and the Mississippi rivers. The method of procedure to be followed is as has been explained by you to Chairman Frank Wenter.

Yours truly,

(Signed) Joseph Haas,
Clerk, Sanitary District of Chicago.

April 6 authority was given by the Joint Committee to purchase material and to provide for the payment and expenses of the experts of the Illinois and Chicago Universities and also for like expenditures in the Municipal Laboratory.

January 19, of the following year, in a letter addressed to Hon. Frank Wenter, Chairman of the Joint Committee, the plan, which had already been put into operation for conducting the work was briefly outlined, and copies of the correspondence showing that St. Louis had failed to join in the proposed investigation or to recognize it in any manner were submitted:

Chicago, January 19, 1900.

Hon. Frank Wenter, Chairman,
Joint Committee on Federal Relations, Health and Public Order,
Board of Trustees of the Sanitary District of Chicago.

Dear Sir:—Under date of January 23, 1899, I was notified by your Committee that I had been selected to undertake the direction of a complete and comprehensive analysis of the waters flowing between Chicago and the Mississippi River.

On the following day, January 24th, I addressed a letter to Andrew Sloan Draper, LL. D., President, University of Illinois, Champaign, Ill.; Winfield S. Chaplin, LL. D., Chancellor, Washington University, St. Louis, Mo., and William R. Harper, D. D., President, Chicago University, Chicago, Ill. It was proposed to them to collect samples, in triplicate, to be sent to the laboratories of each institution.

Dr. Draper accepted promptly, and appointed Dr. Arthur W. Palmer, Professor of Chemistry, to represent the University. Dr. Harper, in accepting for the University of Chicago, named Edwin O. Jordan, Professor of Bacteriology in that institution, as its representative.

Dr. Chaplin, of Washington University, commended the plan, but informed me that the Washington University, an an institution, could not take part in the conference or the work.

On February 6, 1899, I personally visited St. Louis, called upon the Hon. Henry Ziegenheim, Mayor, and verbally requested that the city of St. Louis take the place of Washington University in the investigation. I was referred by him to Mr. W. L. Holman, Water Commissioner. Mr. Holman was interested in the plan, and deemed it fair and wise.

On February 9th the following letter was addressed to Mayor Ziegenheim:

Chicago, February 9, 1899.

Hon. Henry Ziegenheim,
Mayor, City of St. Louis.

My Dear Sir:—In pursuance of our agreement last Monday, I called at once upon Commissioner Holman, with reference to the chemical and bacterial examination of the streams between Chicago and St. Louis which may be affected by the operation of the Main Channel and Waterway of the Chicago Sanitary District.

While our conference was in every way satisfactory and resulted in a mutual understanding, I think it advisable to state definitely, for your own information, the object and scope of the projected examination.

The project had its direct origin in a communication addressed by me, November 28, 1898, to the Board of Trustees of the Sanitary District of Chicago, in which attention was called to the growing fear of St. Louis and certain towns in the lower Illinois Valley that the operation of the Main Channel of the District would prove injurious to the health of those communities, by increasing the pollution of their water supplies, and that this fear was at the bottom of the opposition to the Channel.

Concerning this I wrote:

"My suggestion is based on the assumption that the opposition to the Drainage Channel has an honest animus; that St. Louis and the lower Illinois Valley really believe that the effect of the Channel will be inimical to their health by affecting their water supplies. The way to remove these fears and allay these apprehensions is to ascertain and present the facts truthfully and impartially. I have no doubt as to the result—either as to the certainty of demonstrating a material improvement of the quality of the water by the Channel dilution, or as to the prompt acceptance of the situation by those now opposed when the demonstration has been made."

To ascertain and present the facts truthfully and impartially, it is proposed to secure a chemic and bacteriologic examination of the waters, collected at various points between Chicago and St. Louis, beginning at the earliest possible moment, and to be continued for a corresponding period after the Channel is opened, in order to compare the sanitary quality of these waters before and after the dilution which the Channel will afford.

That the facts shall be ascertained and presented "truthfully and impartially," it was originally proposed that the examinations should be made by three scientific institutions of high reputation, to-wit, the Washington University of St. Louis, the University of Chicago, and the Illinois State University. Triplicate samples of the waters are to be collected at the various points selected, and one set sent to each institution for examination.

In conference with Mr. Holman, it was suggested that the examinations in St. Louis be made in the laboratory of the Water Commissioner and under his supervision. I see no objection to this modification of the original plan; it will probably result in greater confidence by St. Louis in the results obtained.

The two Illinois institutions have signified their readiness to undertake the work as outlined, and I presume it only needs your approval of Commissioner Holman's suggestion in order that we may have an early meeting of the representatives of the three examining bodies to arrange details.

Awaiting your action, which I trust may not be unduly delayed, and thanking you for the courtesies already extended me, I am, my dear sir," etc.

No response was made to this letter. Mayor Ziegenheim was again addressed on March 9th, and again urged to join in the investigation, to which no answer has yet been received.

The laboratory of this Department was then pressed into service, and the work organized and conducted as indicated in the accompanying report of Dr. Gehrmann, Director of the Municipal Laboratory.

(Signed) Arthur R. Reynolds, M. D.,
Director of Streams Examination, for
the Sanitary District of Chicago.

As will be seen by the reports of Dr. Gehrmann and Professors Palmer, Jordan and Burrell, the investigation has been conducted on a plan of greater magnitude than that of any similar inquiry of which I have any knowledge. The scientific gentlemen connected therewith have been untiring in their labors and inspired wholly by a desire to learn the truth. The task imposed upon them was one that appealed to their

interest as scientists and to their pride and loyalty as public-spirited citizens. They have performed an important work faithfully and well, and it is believed that the reward and recognition which are theirs by right will be freely and gladly given, now that the result of their labors and research are to be published in permanent form.

In this connection, too, a word should be said as to the scientific value of the facts and data collated in the present volume.

While sanitary authorities now agree, in the main, on the self-purification of water under certain conditions, there have been those who have taken the negative side of the proposition. The results herein presented and the deductions to be made from the laboratory records of the University of Illinois, the University of Chicago, and the Municipal Laboratory, may be said to be conclusive as establishing the affirmative side of the question. In other words, it is now clearly proven that running water, if not too heavily charged with organic pollution, will purify itself through the natural bio-chemic processes, of which bacterial action and insolation are the most important. Indeed, it is now conceded that unless this were true there would be no such thing as pure water in streams affected by human habitancy.

It only remains for me to acknowledge the valuable services of Dr. John R. Neely, until recently connected with the Department of Health, and to Mr. E. R. Pritchard, secretary of the Department, for work done in the final preparation of the present volume for publication.

The sewage disposal problem of Chicago has been satisfactorily and scientifically solved. Very respectfully,

ARTHUR R. REYNOLDS, M. D.

REPORT OF THE LABORATORY OF THE CITY OF CHICAGO.

BY

PROF. ADOLPH GEHRMANN, M. D.

Arthur R. Reynolds, M. D., Director Streams Investigation, Sanitary District of Chicago.

Dear Sir:—Following your instructions, several conferences between Professor Arthur W. Palmer and Professor T. J. Burrill, of the University of Illinois, and Professor Edwin O. Jordan, of the University of Chicago, and myself, were held during January and February, 1899. These conferences, supplemented by considerable correspondence, resulted in decisions upon the following points connected with the investigation:

First—Localities from which samples would be collected.

Second—That all matters relating to the exact points in the rivers from which the samples would be taken and the selection of collectors would be left to the mutual agreement of Professors Palmer and Jordan.

Third—That arrangements for transportation of samples and equipment of collectors with outfits would be conducted by the Health Department Laboratory.

Fourth—A decision as to the outfits to be used by the collectors.

Fifth—The formulation of a mutually agreed summary of procedure for the methods of analyses to be used by the different laboratories. These methods appear in detail elsewhere.

As a result of these conferences the following communication was sent to you:

"March 28, 1899.

"Arthur R. Reynolds, M. D., Commissioner of Health.

"Dear Sir:—As the present outline of the plan for taking samples in the Illinois and Mississippi rivers contemplates the collection of about forty samples weekly, there will, therefore, be collected during the year 2,080 samples, to be delivered to each of the three laboratories. These samples are to be in duplicate for bacteriological and chemical purposes. They are to be collected in glass-stoppered glass bottles, and properly protected by covers over the stoppers, and sealed. The transportation is to be accomplished by sending wooden cases of such size as to hold the bottles. The samples for bacteriological analysis will be packed in a larger receptacle filled with ice during the warmer periods of the summer.

"The points at which samples are to be taken, as outlined in the present program, are as follows:

Sample.		
1.	Bridgeport	Illinois and Michigan Canal.
2.	Lockport	Illinois and Michigan Canal.
3.	Joliet	Illinois and Michigan Canal, upper basin.
4.	Joliet	Illinois and Michigan Canal, middle basin.
5.	Channahon	Du Page River.
6.	Wilmington	Kankakee River.
7.	Morris	Illinois River.
8.	Ottawa	Fox River.
9.	La Salle River	Big Vermilion.
10.	La Salle	Little Vermilion.
11.	La Salle	Illinois River.
12.	Henry	Illinois River.
13.	Peoria	Illinois River.
14.	Pekin	Illinois River.
15.	Copperas Creek	Illinois River.
16.	Havana	Illinois River.
17.	Chandlerville	Sangamon River.
18.	Beardstown	Illinois River.
19.	Pearl, C. & A. R. R.	Illinois River.
20.	Grafton	Illinois River.
21.	Grafton	Mississippi, above Illinois.
22.	Grafton	Mississippi, below Illinois.
23.	Alton	Mississippi, above city.
24.	Alton	Mississippi, above city.
25.	Alton	Mississippi, above city.
26.	Alton	Mississippi, below city.
27.	Alton	Mississippi, below city.
28.	Alton	Mississippi, below city.
29.	Bellefontaine	Missouri River.
30.	St. Louis	Mississippi, below Missouri.
31.	St. Louis	Mississippi, below Missouri.
32.	St. Louis	Mississippi, below Missouri.
33.	St. Louis	Mississippi, below Missouri.
34.	St. Louis	Mississippi, below Missouri.
35.	St. Louis	Mississippi, below the city.
36.	St. Louis	Mississippi, below city.
37.	St. Louis.	Mississippi, below city.
38.	St. Louis	Mississippi, below city.
39.	St. Louis	Mississippi, below the city.
40.	St. Louis	City water supply.

"I have obtained a rough estimate of the outfits that will be required for the collection of the samples, basing the general requirement upon the 40 samples a week to each laboratory, with sufficient cases and extra bottles to prevent any possible delay in sending the samples, or in case accidents should cause breakage. Two hundred complete outfits have been decided upon as the proper number to consider in the first estimate.

"Respectfully,

"ADOLPH GEHRMANN, M. D.,

"Director of Laboratory."

Supplies were purchased and the required number of outfits for the collectors was prepared. After some difficulty satisfactory arrangements for transportation of the shipping cases were made with the express companies. Upon advice from Professor Palmer and Professor Jordan, the collectors were supplied with outfits and instructions. The following general letter of instructions was sent to each man thus selected:

"Chicago, May 19, 1899.

"Mr. ———, Collector at ———.

"*Dear Sir:*—According to arrangements that have been made by Professors Jordan and Palmer, you are to make collection of samples of water for the Chicago Sanitary District.

"These samples are to be collected —— of each week from the locality designated by them. From each spot from which water is obtained three separate samples must be collected; as each sample is represented by a large bottle and a small one, six bottles must be filled with water.

"The shipping cases and outfits have been sent to you. The tags, seals and numbers you will find in one of the three cans belonging to each sample. There is one press for the seals; this bears a number. This is your number as collector.

"The three samples are to be packed in the shipping cases and sent to the three addresses indicated upon the shipping envelopes. The shipping envelope is to be fastened to the neck of the large bottle by the wire seal; the small bottles do not require shipping envelopes.

"The samples are to be numbered with the tin tags bearing numbers. Use the numbers in regular order. As there are six bottles from each locality, there are six tags numbered alike, and one of these is to be fastened by the seal to each bottle. In putting on the seals pass the wire in and out through the holes in the cloth cover of the bottle.

"Read carefully the instructions on the cards that go in the shipping envelopes.

"The bills for this service are to be rendered monthly and must be made out in duplicate as follows:

"Chicago Sanitary District,
"Arthur R. Reynolds, M. D.
"Director of Streams Examination,
"411 City Hall, Chicago.

"The bill must state the dates and places of taking samples. Should you desire additional information upon any point or wish to give up the collection of samples at any time, please write to me.

"Very respectfully,
"(Signed.) ARTHUR R. REYNOLDS, M. D.,
"Director of Streams Examination."

Subsequent to this another circular letter was directed to each station calling special attention to certain points that apparently were not clearly understood. By this means and also through considerable personal

correspondence, the collectors came to attend to their duties with accuracy and expedition. Much credit is due these collectors for the success of the investigation.

Supplemental instructions sent to collectors:

"Chicago, May 31, 1899.

"Mr. ———, Collector at ———.

"*Dear Sir:*—It is desired that you proceed in the following manner regarding the packing of the small sample bottles in the cans: When the bottle is placed in the small can the lid must be pressed firmly in place so as to prevent water getting into it. The smaller can is then to be packed in ice in the large can. *This can must be completely filled with ice.* In the shipping case the packing paper goes around the can, and excelsior is to be stuffed into the corners and packed over the top of the can, filling up to the top of the shipping case. The ice must be kept from melting as well as possible.

"We are about to send you one complete outfit for sample to use in case of accident to any of the regular bottles or cans that are in use. This you will keep until used.

"We are also sending you the thermometers for taking temperature. These you will find in one of the shipping cases returned to you.

"Yours very truly,

— — ————————."

In June of 1899 this part of the service was moving smoothly, and it was now considered that the men were sufficiently experienced to begin the official series of samples. At this time the complete list of collectors was as follows:

MONDAY.

1. Ill. and Mich. Canal.........Bridgeport, 500 feet west of pumping station.
2. Ill. and Mich. Canal........Lockport.
3. Desplaines River. ....Lockport.
4. Ill. and Mich. Canal (north).Joliet, E. bank of N. of Jackson street.
5. Ill. and Mich. Canal (south).Joliet, E. bank of R. L. Ry bridge.
6. Kankakee River ....Wilmington.
7. Illinois River ....Morris, at bridge.
8. Fox River ....Ottawa, above canal viaduct.
9. Illinois River ....Ottawa.
   Ill. and Mich. Canal..........Ottawa.

TUESDAY.

10. Big Vermilion River ....La Salle, at bridge.
11. Collection from Little Vermilion River once in four weeks ....Ill. and Mich. Canal.
12. Illinois River ....La Salle, at wagon bridge.
13. Illinois River ....Henry, at dam.
14. Illinois River ....Peoria, Averyville bridge, at narrows No. 11.
15. Illinois River ....Wesley City.
16. Illinois River ....Pekin.
17. Illinois River ....Havana, above mouth of Spoon River and Quiver Lake.
18. Sangamon River ....Chandlerville.

WEDNESDAY.

19. Illinois River	Beardstown.	
20. Illinois River	Kampsville, above dam.	
21. Illinois River	Grafton, 2 miles above, in mouth of Illinois River.	
22. Mississippi River	Grafton, above mouth of Illinois.	
23. Mississippi River	Alton, Ill., 100 ft from E. bank	Opposite new pumping station of city water works.
24. Mississippi River	Alton, Ill., E. of middle	
25. Mississippi River	Alton, Ill., mid-stream	
26. Mississippi River	Alton, Ill., W. of middle	
27. Misissippi River	Alton, Ill., 100 ft from W. bank, head of dike	

THURSDAY.

28. Mississippi River	Mitchell, 400 yds. from Ill. shore	At St. Louis city pumping station.
29. Mississippi River	Mitchell, main channel	
30. Misisippi River	Mitchell, inlet tower	
31. Mississippi River	Mitchell, 400 ft. from Mo. shore	
32. Missouri River	W. Alton, Ill., at C., B. & Q. Ry bridge	
33. Mississippi River	Jefferson Barracks, E. bank.	
34. Mississippi River	Jefferson Barracks, E. middle of stream.	
35. Mississippi River	Jefferson Barracks, mid-stream.	
36. Mississippi River	Jefferson Barracks, W. of middle.	
37. Mississippi River	Jefferson Barracks, W. bank.	
38. St. Louis, Mo., tap.........	St. Louis, Mo.	

COLLECTION OF SAMPLES.

1. Bridgeport, 1 sample	Illinois and Michigan Canal, collector J. E. Thomas, Asst. Eng. Pumping Station.
2. Lockport, 1 sample..........	Canal and Desplaines River, collector P. W. O'Brien, Lockport.
3. Joliet, 2 samples	Both from Canal, Ray Hurd; collector R. P. Elliott, Agt. U. S. Exp.
5. Morris, 1 sample	Illinois River, J. W. Miller, Box 712; collector James Mack, Morris.
6. Ottawa, 2 samples	Fox River and Canal, collector Dennis Foley, Ottawa, Ill.
7. La Salle, 3 samples	Big Vermilion. Little Vermilion and Illinois Rivers, collector Dr. Wm. Fraser.
8. Henry, 1 sample	Illinois River, collector Jas. McCune, Henry, Ill.
9. Peoria, Averyville, 1 sample..	Illinois River, collector D. J. Forbes, Peoria waterworks, Peoria.
10. Wesley City, 1 sample	Illinois River, collector D. H. Jansen, Co. Surveyor.
11. Pekin, Ill., 1 sample.........	Illinois River, collector D. H. Jansen, Co. Surveyor.
12. Havana, 1 sample	Illinois River, collector H. J. Heberling.
13. Chandlerville, 1 sample.......	Sangamon River, collector. E. O. Spink.
14. Beardstown, 1 sample	Illinois River, collector J. A. Carney, C., B. & Q. Ry.
15. Kampsville, 1 sample	Illinois River, collector C. V. Brainard, Asst. U. S. Eng.
16. Grafton, 3 samples..........	Illinois, Mississippi and Missouri Rivers, collector B. F. Robinson Grafton.
17. Alton, Ill., 5 samples	All from Mississippi River, collector Geo. Brooks, Alton.
18. Mitchell, 4 samples	Mississippi River, collector Henry Atkins, Mitchell.

19.	West Alton, Mo., 1 sample...	Missouri River, collector Jas. Mathews, West Alton.
20.	St. Louis, Mo., 1 sample.....	Mississippi River and St. Louis tap, collector Aug. Johnson, 407 Espensheid street.

These general arrangements remained in force during the period of the investigation.

ANALYSES OF LAKE MICHIGAN WATER IN THE HEALTH DEPARTMENT LABORATORY.

A systematic analysis of the city water supply from Lake Michigan has been made since January, 1894. During 1894 samples were collected weekly, but from January, 1895, daily samples, exclusive of Sundays and holidays, have been examined. Full details of these analyses have been published from time to time in the reports of the Department of Health. Previous to the opening of the main drainage channel in January, 1900, a very close relation between rainfall and the sanitary quality as shown by analysis was demonstrated. Since that date this close relationship has failed to appear on numerous occasions, and although the evidence of contamination appears at irregular intervals, there is in general much improvement, especially as shown in the analyses of samples from the intakes farthest from shore. As a large area south of Thirty-fifth street and east of Clark street, and another north of Fullerton avenue, still drain into Lake Michigan, the source of pollution is still apparent, and not until the sewers in these areas are connected with the intercepting sewer system can much improvement over present conditions be expected.

The results of the analyses made in the laboratory of the department, which appear in the tabulations, give evidence of the purification taking place in the waters of the main drainage channel and in the Illinois River. On all of the main points these are in entire agreement with the results of our colleagues in the investigation. The slight variations in individual analyses are due to differences in time between collection and analysis and variations in temperature of the samples. The series of analyses made by us does not cover as long a period as those of our associates; this was occasioned by the increase in the regular work of the laboratory and also by changes in our working force. For the same reasons special summaries of the results were not prepared. Indeed, as these would be simply repetitions of those that are presented, they would not, in the least, change the outcome of the investigation.

CONDITIONS IN LAKE MICHIGAN.

The water front of the city is 21 miles in extent. Farther north are numerous towns, the sewage of which drains directly into the lake, while to the south the Calumet River, highly polluted with house drainage and manufacturing refuse, is an important source of pollution. However, all polluted water reaching the intakes is highly diluted and subject

to more or less digestion as it lays along near shore and purification by mixture with fresh lake water in passing into the lake two or four miles.

WHAT MAY BE CONSIDERED AS NORMAL LAKE WATER.

To determine this, samples have been collected at intervals at a distance of ten to twelve miles from shore and a varying depth from ten feet below the surface to a depth of fifty feet.

Analysis of Lake Michigan water taken twelve miles east of the mouth of Chicago River:

Total solids	130.00
Loss on ignition	24.00
Fixed mineral solids	106.00
Chlorine	5.50
Free ammonia	none
Albuminoid ammonia	.08
Nitrogen as nitrates	none
Nitrogen as nitrites	none
Total nitrogen	.064
Oxygen consumed in 10 min	1.600
Bacteria per cc.	520
Pathologic bacteria absent.	

(In parts per million.)

October 23, 1896—ten feet below the surface.

Day clear; wind west; wind movement for previous twenty-four hours, 315 miles; precipitation, none; mean temperature, 42° F.

This may be taken as an average analysis of the lake water under most favorable conditions. However, it may be said in regard to the number of bacteria per cubic centimeter that this will be lower in most instances. The count as usually found during the best periods is less than 100 per cubic centimeter.

The extent to which the area of contamination will pass into the lake has been shown by similar series of samples, and from these it has been found to extend ten miles from shore.

Samples collected ten miles from shore upon the days as noted showed presence of B. coli communis or an allied variety.

October 25, 1900, B. coli communis.
November 23, 1900, colon group bacilli.
December 6, 1900, B. coli communis.
April 12, 1901, colon group bacilli.

Samples taken July 12, August 2, August 9, September 6, September 20, 1900, and on April 3 and June 26, 1901, at about the same place, 10 miles east from the mouth of the Chicago River, showed absence of the colon-typhoid group of bacteria.

The daily examination has included regular samples from the intake tunnels as follows:

Fourteenth street, four-mile tunnel off Peck court.
Chicago avenue, two-mile tunnel off Chicago avenue.
Hyde Park, two-mile tunnel off Sixty-seventh street.
Lake View, two-mile tunnel off Montrose boulevard.

Since January 1st regular samples from Carter H. Harrison Crib, three miles off Oak street, and from Rogers Park water supply have been examined. These, however, are not important in this connection, as there are no earlier analyses with which to make comparisons.

In order to show the variation taking place in the quality of the water, samples have been collected every hour during twenty-four-hour periods. The following is a report that was rendered upon such a special series of samples:

"Chicago, Aug. 23, 1900.

"Dr. F. W. Reilly, Assistant Commissioner of Health.

"*Dear Sir:*—In accordance with your request a series of water samples was collected from the tap in the Fourteenth street pumping station every hour for a period of ten hours, beginning August 20 at 7 p. m. The result of the chemical examinations of these samples is as follows:

Sample No. Time-	Free ammonia.	Albuminoid ammonia.	Chlorine.	Oxygen consumed in 10 min. at 100° C
August 20—				
8733— 7 p. m.	.000	.005	.60	.260
8734— 8 p. m.	.001	.005	.60	.260
8735— 9 p. m.	.000	.008	.60	.230
8736—10 p. m.	.000	.008	.60	.230
8737—11 p. m.	.002	.008	.60	.300
8738—12 p. m.	.001	.008	.60	.320
August 21—				
8739— 1 a. m.	.000	.009	.60	.250
8740— 2 a. m.	.001	.006	.60	.250
8741— 3 a. m.	.000	.008	.60	.210
8742— 4 a. m.	.000	.007	.60	.240

In parts per 100,000.

No. Time.	No. Micro-Organisms per cubic centimeter.	Pathogenic organisms found.	Sanitary quality.
August 20—			
8733— 7 p. m.	300	None.	Good.
8734— 8 p. m.	60	None.	Good.
8735— 9 p. m.	125	None.	Good.
8736—10 p. m.	115	None.	Good.
8737—11 p. m.	155	None.	Good.
8738—12 p. m.	45	None.	Good.
August 21—			
8739— 1 a. m.	200	None.	Good.
8740— 2 a. m.	65	None.	Good.
8741— 3 a. m.	60	None.	Good.

"The result of this examination shows that during this period there was nothing more than slight changes in the character of the water. The sanitary quality of all the samples would be rated as 'good.'

"The presence of free ammonia in four of the samples cannot be taken as an indication of serious pollution; although the normal lake water seldom contains more than traces of free ammonia.

"The average amount of albuminoid ammonia as determined by our analyses of the samples taken as far as ten miles into the lake shows that it ranges between .007 and .009 per 100,000. As far as the albumin-

oid ammonia figures are concerned in this series, the indication would be plain that unpolluted lake water was being taken from the four-mile crib. Very respectfully,

"ADOLPH GEHRMANN, M. D.,
"Director of Laboratory."

TABLES SHOWING VARIATIONS IN SANITARY QUALITY OF LAKE WATER.

The following tabulations are summaries of all the analyses of samples collected at the pumping stations during 1896 to 1901, inclusive, and present the average for each station for the years named:

		In Parts per 100,000						
Years.	Stations	Free ammonia.	Albuminoid ammonia.	Chlorine.	Oxygen consumed.	Bacteria. per c.c.	Per cent. times bacteria found.	
1896	14th Street	.00185	.00701	.317	.157	3,841	4.21	Patho-
	Chicago Avenue...	.00181	.00765	.323	.172	7,008	7.14	genic
	Hyde Park	.00146	.00671	.325	.158	6,015	7.14	for
	Lake View	.00151	.00881	.328	.184	7,511	6.92	Animals.
1897	14th Street	.0004	.0060	.280	.181	6,840	16.5	
	Chicago Avenue ..	.0012	.0065	.327	.229	10,516	24.5	
	Hyde Park	.0002	.0062	.322	.198	8,405	20.3	
	Lake View	.0017	.0065	.309	.193	10,095	20.4	B Coli
1898	14th Street	.0004	.0035	.325	.177	996	13.0	Communis.
	Chicago Avenue ..	.0010	.0038	.333	.203	2,032	19.7	
	Hyde Park	.0005	.0039	.335	.207	1,380	19.1	
	Lake View	.0005	.0033	.328	.185	2,206	12.8	
1899	14th Street	.0012	.0047	.337	.147	645	30.3	
	Chicago Avenue ..	.0011	.0048	.331	.151	1,323	48.2	
	Hyde Park	.0011	.0047	.335	.167	786	44.4	
	Lake View	.0011	.0043	.337	.166	400	35.9	
1900	14th Street	.0019	.0124	.318	.178	227	23.2	
	Chicago Avenue ..	.0024	.0123	.316	.207	518	53.4	Typho-
	Hyde Park	.0019	.0117	.317	.181	409	48.4	Colon
	Lake View	.0018	.0119	.317	.183	330	32.3	Group.
1901	14th Street	.0012	.0094	.312	.164	1,161	23.0	
	Chicago Avenue ..	.0017	.0099	.319	.191	1,558	38.1	
	Hyde Park	.0014	.0091	.318	.163	1,673	35.0	
	Lake View	.0008	.0091	.318	.165	1,570	26.5	

During the first three months of 1902 a marked improvement in quality is manifest, as shown by percentages of samples in which the pathogenic bacteria were found during this time.

1902.	January.	February.	March.	Average.
14th Street Station	11.5	0.0	0.0	3.8
Chicago Avenue Station	42.3	54.5	4.0	33.6
Hyde Park Station	30.8	13.6	4.0	16.1
Lake View Station	7.7	0.0	0.0	2.6

As each step in the general scheme for pure water has been made, a degree of improvement corresponding to it has been noted. Each time that serious contamination has been noted the evidence for it has been obvious, and as soon as the fault was corrected, the quality of the water returned rapidly to the status before the special period of pollution.

Respectfully submitted,

ADOLPH GEHRMANN, M. D.,
Director of Laboratory.

REPORT OF THE UNIVERSITY OF CHICAGO.

BY

PROF. E. O. JORDAN, PH. D.

ARTHUR R. REYNOLDS, M. D., Director of Streams Examination.

Dear Sir:—I beg to submit herewith the final and complete report upon the chemical and bacterial analyses conducted under my direction in behalf of the Sanitary District of Chicago. These analyses cover a period extending from May 1, 1899, to July 1, 1900, and embrace about two thousand chemical and bacterial determinations. Regular weekly analyses have been made of water samples collected from the Illinois and Michigan Canal, from various parts of the Desplaines and Illinois rivers and from the principal tributaries of the Illinois River; regular examinations have also been made of samples from the Mississippi River at several points, from the Missouri River and from the St. Louis city water supply. The reasons governing our choice of the points for collection are stated in detail elsewhere (pp. 47-54). With two exceptions the collecting stations have been visited conjointly by Professor Palmer and myself, and all of the more important stations have also been visited separately by us both.

Throughout the investigation I have been assisted on the chemical side by Mr. F. L. Stevens, Ph. D. (Chicago), and on the bacterial side by Mr. E. E. Irons, S B. The continued faithfulness, zeal and high efficiency with which they have carried on their work deserve especial mention. I have also been assisted in special ways at various times by Messrs. W. G. Sackett, W. L. Sayer and C. B. Davis.

DESCRIPTION OF METHODS EMPLOYED AND RESULTS OBTAINED IN THE REGULAR ROUTINE EXAMINATION.

(a) *Method of Collection.* Explicit instructions were given to all collectors concerning the methods to be employed, and, in addition, printed directions were sent out weekly with each collecting bottle. The bacterial samples were collected in wide-mouth four-ounce glass bottles, which were sterilized in the laboratory, enclosed in a tight-fitting metal case, which was itself placed in a large packing canister, ten inches deep and six and one-half inches in diameter, and the whole, together with the

corresponding bottle for the chemical samples, fitted into a wooden box, one such outfit being shipped to the collector each week. Great pains were taken to insure that the sample was obtained with due bacterial precautions, and in order to emphasize the instructions given to the collector personal visits, involving careful supervision and recurrent demonstration, were made frequently to all the more important points of collection. The water sample was always taken at a point about eight inches below the surface and in midstream, except at Joliet and save where cross-sections were taken. The bottle of water was placed in its covered case as soon as collected, and this case was then packed in the canister and completely surrounded with ice. The hour of collection was always timed to permit of as speedy shipment as possible.

The chemical samples were collected in glass-stoppered bottles of one-gallon capacity. These were cleaned with chromic acid cleaning mixture each time before being sent out from the laboratory, thoroughly rinsed with ammonia-free water and drained. The stoppers were secured in place by tying tightly over them a piece of rubber cloth. After filling the bottle the cloth cap was fastened in place with wire which was sealed with stamped metal.

(b) *Methods of Physical and Chemical Analysis.* A serial number was assigned to each sample immediately upon its receipt in the laboratory, and this number was also placed upon the collector's certificate. The seal was then broken and the cover of the stopper removed. Any dust adhering was carefully wiped away, and a few cubic centimeters of the sample were poured out to wash the lip of the bottle. About 1,500 c.c. of the water were then filtered through a double filter (Munchfilter, No. 0), which had been carefully washed with a half liter or more of pure water. The determinations of the "nitrites" and "nitrates" have been made first, followed by the "ammonias" and oxygen consumed. The "date of collection" recorded in the table is taken from the collector's certificate that accompanies each sample; the "date of examination" refers to the date of making the nitrate and nitrite determinations and the ammonia analyses. The determinations of the residue and chlorine have been completed as soon as practicable. The results are all expressed in parts per million.

The loss on ignition of the residue on evaporation was omitted, since analysts are now generally agreed that the information furnished by this determination is not valuable enough to compensate for the labor involved.

Turbidity and Sediment.—The turbidity and sediment have been determined in the laboratory merely by ocular inspection and are expressed by the conventional adjectives "slight," "distinct," "decided" or "muddy," as regards turbidity; "very little," "little," "considerable" or "much," to indicate the sediment.

In the absence of any recognized standard at the time this investigation was undertaken this seemed to be the best method available, although it proved far from satisfactory.

Color.—For the sake of uniformity with previous examinations of the waters dealt with, the color of the filtered water has been ascertained by

comparison with nessler standards, in which .01 m. g. of N. as ammonia is taken as a unit of color.

Odor.—The odor is recorded either as "gassy" or as "none," with no attempt to classify further.

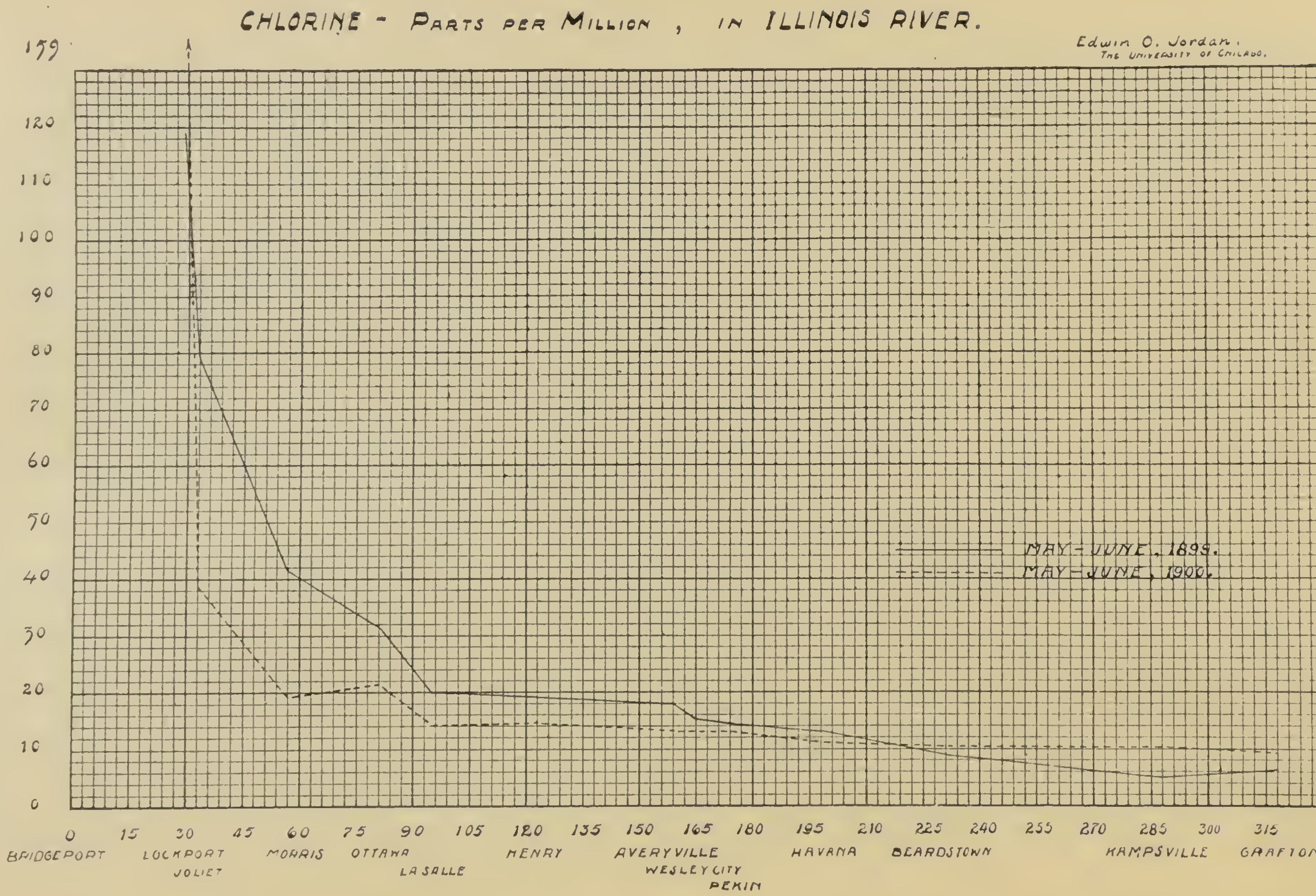
Residue.—The total and dissolved residues on evaporation have been determined by evaporating 100 c.c. of the unfiltered and filtered waters, respectively, in a weighed platinum dish over the steam bath at about 100° C. The dish with the residue is then heated to a temperature of 170°-180° for one hour and the weight taken, after cooling in a desiccator over calcium chloride.

Chlorine.—The ordinary process of titration with silver nitrate has been followed (Report of Massachusetts State Board of Health, 1890, Purification of Sewage and Water, p. 723), 50 c.c. of water being used. Potassium chromate, 1 c.c. of a 5 per cent solution, is used to indicate the end of the reaction. When the amount of chlorine was presumed to be low (under fifteen parts per million) a measured quantity, usually 250 c.c. of the sample, was concentrated to less than 50 c.c. before titrating.

Oxygen Consumed.—One hundred cubic centimeters of the sample were measured into an Erlenmeyer flask of about 300 c.c. capacity and acidulated by the addition of 5 c.c. of concentrated sulphuric acid. Ten cubic centimeters of standard potassium permanganate solution were then added and the sample allowed to remain in boiling water for thirty minutes, more permanganate being added, if needed, to prevent complete loss of color. Upon removal from the bath, ten cubic centimeters of standard oxalic acid solution were added and the sample titrated back to a just perceptible pink color with permanganate. Great care was taken to insure that the process was carried out in the same way at each determination, and to this end quantity, time and temperature were made strictly uniform.

Nitrogen as Free Ammonia.—A half liter of the water, or less if the nitrogen content was very high, was rendered alkaline by the addition of 5 c.c. of 20 per cent sodium carbonate solution and distilled in glass flasks through a block tin tube condenser; the rate of distillation was such that 50 c.c. were collected in about ten minutes. The distillate was caught in three 50-c.c. nessler tubes and the tubes nesslerized separately unless the ammonia was high, in which case 200 c.c. of the distillate were caught in a graduated flask and, after thorough mixing, an appropriate aliquot portion was taken in a tube for nesslerization. Before each analysis the flasks and condenser were steamed until free from ammonia.

Nitrogen as Albuminoid Ammonia.—To the residue from the last operation 50 c.c. of the ordinary alkaline permanganate solution were added and the distillation continued, the distillate being collected either in tubes or flasks, according to the quantity of ammonia present. A small amount of rather coarse, thoroughly burned pumice has been found very useful in this process as a preventive of bumping, which is otherwise extremely troublesome.


CHLORINE - PARTS PER MILLION, IN ILLINOIS RIVER.
Edwin O. Jordan.
The University of Chicago.
159
120
110
100
90
80
70
60
50
40
30
20
10
0
0 15 30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285 300 315
BRIDGEPORT
LOCKPORT
JOLIET
MORRIS
OTTAWA
LA SALLE
HENRY
AVERYVILLE
WESLEY CITY
PEKIN
HAVANA
BEARDSTOWN
KAMPSVILLE
GRAFTON
MAY-JUNE, 1899.
MAY-JUNE, 1900.

Nesslerization.—The determination of the amount of ammonia in the distillate was made in the usual way by comparison with standard ammonia tubes. This process is greatly facilitated by the use of a nesslerizing cabinet, which is constructed, in a somewhat modified form, upon the same principle as one which has been in use for some years in Professor Palmer's laboratory at the University of Illinois. Eighteen standards are used, ranging in value from .004 to .13 parts per million. Fresh standards are made for each nesslerization, and the nessler solution is added to them and simultaneously to the distillates, which have been cooled to the room temperature. The readings are made about thirty minutes later.

Nitrogen as Nitrates.—The nitrates have been determined by the aluminum reduction method, which has not proven very satisfactory for many of the waters dealt with, but which has been adhered to for the sake of uniformity. Two and one half cubic centimeters of 33 per cent nitrogen-free sodium hydroxide solution were added to 100 c.c. of the sample and the mixture boiled rapidly to a volume less than 50 c.c., in order to drive off the free ammonia. After cooling, the residue was poured into a tall tube, its volume made up to 50 c.c., and a strip of aluminum added. After about twelve hours, when reduction is complete, the aluminum is removed and the tube allowed to stand till the supernatant fluid is clear. A measured portion, usually 10 c.c. or 20 c.c., is then pipetted into a nessler tube, diluted to the mark and nesslerized directly.

Nitrogen as Nitrites.—A modification of the Griess method was employed. Two stock solutions were prepared:

1. A saturated solution of sulfanilic acid in 5 per cent HCl.
2. Eight gr. of napththylamine, 8 c.c. of HCl, made to 1,000 c.c.

These solutions were mixed in quantities of about 100 c.c. at a time, and the mixed solution was employed as the test solution, thus avoiding unnecessary pipetting. One cubic centimeter of the mixture was added to each tube.

About 50 c.c. of the sample were clarified by the use of one cubic centimeter each of decinormal alum and soda solutions and filtration through a washed filter paper. Then 50 c.c., or less if the nitrite was high, were placed in a nessler tube and compared with standards, the reading being taken about forty-five minutes after the addition of the test solution.

The standards were made with sodium nitrite prepared from silver nitrite.

(c) *Methods of Bacterial Analysis.* Dilution.—Preliminary experiments showed that when water containing a large number of bacteria was mixed directly with the nutrient medium a considerable proportion of the organisms present failed to develop visible colonies. Consequently, all waters were diluted with a known quantity of sterile water in small flasks, so that from 1 c.c. of the dilution used approximately one hundred colonies developed on a plate.*

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* See Notes on Bacterial Water Analysis. Jordan and Irons. Reports and Papers of American Public Health Association, 1899, XXV, p. 564.

Plating.—Nutrient agar, prepared as described below, was used as the standard medium throughout the work. Tubes containing 6-8 c.c. were heated in the water bath at 100° C. for about ten minutes and then placed in a water bath at 40° C. The tubes, after being allowed to cool to 40° C., were inoculated with 1 c.c. of a suitable dilution of the water under examination, and quickly poured into sterile Petri dishes, care being taken that as little as possible of the medium remained in the tubes. The plates were incubated in a dark culture room, the air of which was kept moist, at 20°-23° C. for eight days, and finally counted with the aid of a small hand lens. During the early part of the work an incubation period of ten days was allowed, but the shorter period of eight days was found to give as constant results, and was finally adopted.

Media.—Nutrient agar was made, with some slight modifications, after the standard method. Lean beef (1,200 gr.), chopped fine, was immersed in twice its weight of distilled water in the cold for twenty-four hours and the resulting infusion strained through cloth, yielding about 2,400 c.c. of filtrate. Of this filtrate, 2,000 c.c. were heated and the insoluble albumens precipitated. On filtration, about 1,600 to 1,800 c.c. of clear filtrate were obtained. The remaining 400 c.c. of the original infusion was added to 1,600 c.c. of this filtrate, together with 1 per cent Witte's peptone and 1¼ per cent of agar-agar, previously dissolved by boiling for ten minutes in one liter of distilled water. The whole was boiled over a free flame for half an hour and then neutralized.

The total precipitation of albumens in the 2,000 c.c. of the original infusion was found advantageous, for the reason that, when all the albumen was allowed to remain, it interfered greatly with the recognition of the end point in titration, and also hindered filtration. Total precipitation of part of the infusion was found preferable to partial precipitation of the whole, because the flocculent precipitate which first comes down is much better adapted to final clearing of the agar than is the later, less flocculent matter. For these reasons the albumen in one-fifth of the infusion was regularly used as a final coagulant for the whole.

After the first neutralization, the agar was boiled for one and one-half hours over a free flame, the loss of water by evaporation, measured by weight, being made up from time to time with distilled water. After the second boiling the agar was neutralized, boiled for five minutes and filtered through paper in an ordinary glass funnel. The process usually yielded about 1,600 c.c. of clear agar, which filtered in from ten to twenty minutes, the last few cubic centimeters taking slightly longer.

The finished agar was made up to standard plating reaction (10 c.c. normal acid per liter), with normal HCl, and was then immediately tubed and sterilized in the autoclave at 120° C. for five minutes.

Sodium hydrate ($\frac{n}{20}$) was used in titration with phenolphthalein (1 gr. in 1 l. of 50 per cent alc.) as an indicator. A permanent faint rose tint was regarded as the end point. In titration, 5 c.c. of the medium were boiled with 50 c.c. of distilled water in a white evaporating dish for three minutes over a free flame, and titrated while hot. All titrations

were made in duplicate. Normal sodium hydrate was used in neutralization.

(d) See tables 81-158 (Appendix).

(e) *Methods and Results of the Examination for the Presence of B. coli communis.* It is well known that fresh sewage always contains large numbers of the common colon bacillus. It is also true that when a water source is polluted with any considerable quantity of fresh sewage it is usually possible to demonstrate the presence of the colon bacillus in such water. Upon these familiar facts have been based various methods and conclusions of greater or less value to public hygiene.

The particular method of gauging the so-called self-purification of a stream by the relative abundance of B. coli communis at different points is not a new one, but, so far as the writer is aware, it has not been often applied on a large scale.

Theobald Smith's ingenious method of estimating the approximate number of fecal bacteria in water by the fermentation tube was first used in the study of the self-purification of streams by Smith and Brown* (1893).

The work of these authors was carried out upon the Mohawk and Hudson rivers, under the auspices of the New York State Board of Health, and aided materially in the solution of local problems. Owing, however, to the relatively low degree of pollution obtaining in these particular river waters, as is shown both by the chlorine determinations and by the small number of fecal bacteria, the contrast between different points along the course of the river is not very marked.

Some investigations also have been carried out by Hammerl* upon the river Mur above and below Gratz, but the number of this author's determinations, as recorded in his article, are so few, and his method for the detection and enumeration of colon bacilli** is so inadequate that not much weight can be attached to his conclusions.

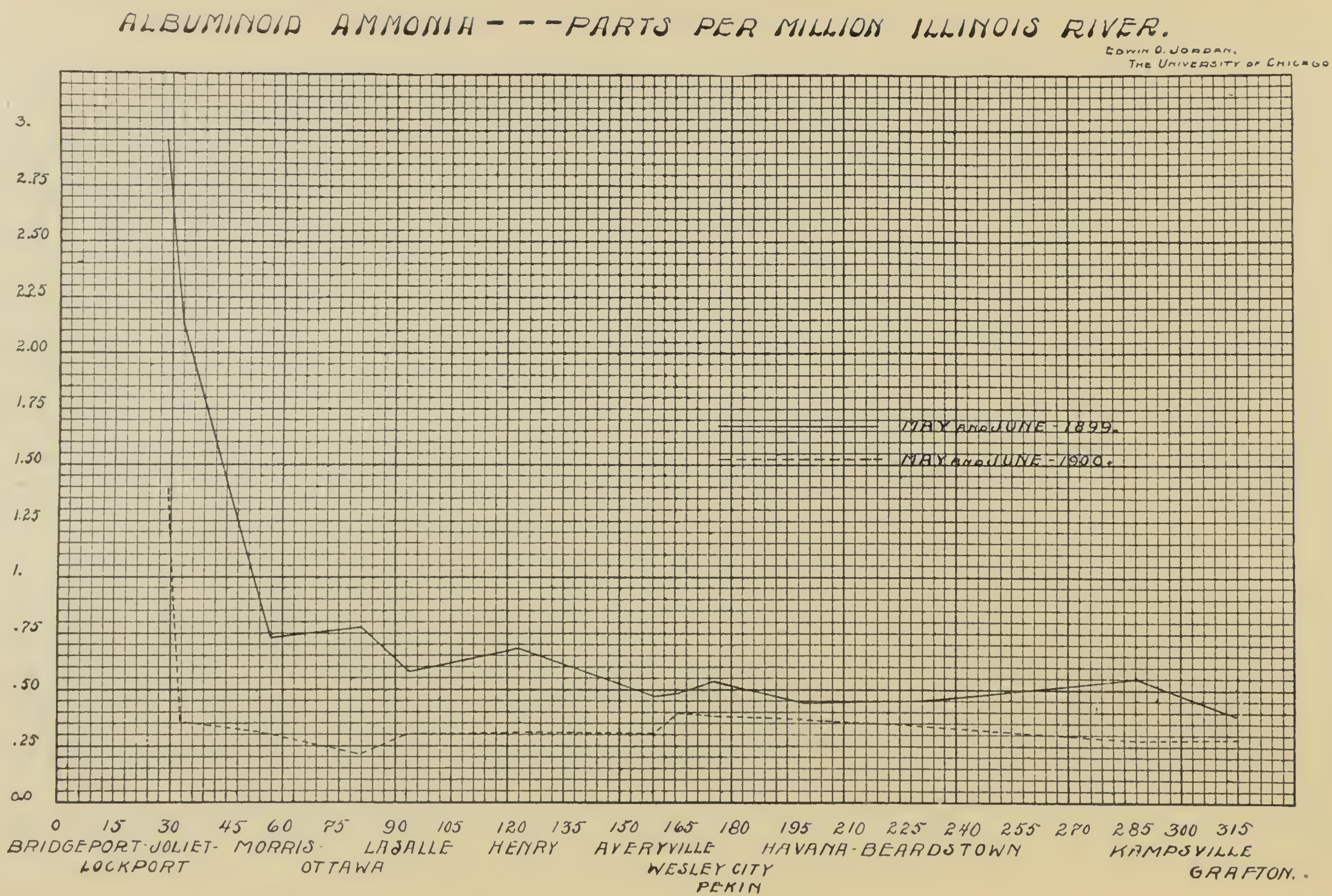
From a general standpoint, it is clear that the question of self-purification can be most advantageously studied where the proportion of sewage added to river water is very high, so that slight fluctuations, due to temporary and local conditions, to incomplete mingling and to other minor factors, are wholly submerged by a gross and constant pollution. A particularly favorable opportunity has been afforded in the course of the investigation of the conditions created in the Illinois Valley by the discharge of the sewage of the city of Chicago into the Desplaines River. The enormous initial pollution and the fact that during certain seasons of the year the dilution from rainfall and run-off is slight* render it a comparatively easy task to trace the progressive purification in the flowing stream. Few other rivers, in which the process of self-purification has been studied, present so fortunate a union of three important conditions—extreme pollution, relatively little dilution and great length.

* New York State Board of Health, Report for 1893, p. 680.

* Hyg. Rundschau, 1897. XI, p. 529.

**Suspicious colonies upon a gelatin plate were fished and tested "for ability to grow at blood temperature, to curdle milk and to produce gas in media containing sugar," op. cit., p. 537.

* A chlorine content as high as 40 (parts per million) has been found at the mouth of the Illinois.


ALBUMINOID AMMONIA---PARTS PER MILLION ILLINOIS RIVER.
EDWIN O. JORDAN.
THE UNIVERSITY OF CHICAGO.
MAY AND JUNE-1899.
MAY AND JUNE-1900.
3.
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.
.75
.50
.25
0.0
0 15 30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 255 270 285 300 315
BRIDGEPORT-JOLIET- MORRIS- LASALLE HENRY AVERYVILLE HAVANA-BEARDSTOWN KAMPSVILLE
LOCKPORT OTTAWA WESLEY CITY GRAFTON.
PEKIN

Methods. In the beginning of the work use was made of the method of direct inoculation of water into the fermentation tube, as suggested by Theobald Smith in 1893, but this procedure was soon abandoned in favor of another method, which was continued through the major part of the investigation. This consisted in a preliminary incubation of a measured quantity of water in carbol-broth. The carbol-broth was prepared by adding 1 c.c. of a 1 per cent solution of carbolic acid in sterile water to tubes containing 9 c.c. of sterile broth of the standard composition. The use of measured quantities of fluid in this way, of course, necessitates allowance for evaporation during sterilization. By careful attention to the size of the tube and to the period of sterilization in the Arnold steam sterilizer, it has been found possible to calculate very closely the loss of fluid during heating and to make due allowance for it; subsequent evaporation before use has been guarded against. The carbol-broth, which we have used, has been first rendered neutral to phenolphthalein and then acidified by the addition of 5.5 c.c. of normal acid per liter.

In carrying out the method 1 c.c. of a suitable dilution of the water has been added to the tube of carbol-broth and incubated at 38° for 18-24 hours. Platings from this broth have then been made in litmus-lactose-agar (5 c.c. normal alkali per liter). If red colonies developed on the medium at 38° they were transferred to tubes and tested at once for (1) Gas-production in dextrose broth in the fermentation tube; (2) Indol-production in sugar-free broth; (3) Coagulation of milk; (4) Liquefaction of gelatin.

During a part of the investigation another method was employed, consisting of the introduction of water directly into dextrose broth fermentation tubes without preliminary incubation. The dextrose broth was prepared with fresh meat from which the muscle-sugar had been removed by Smith's method, and to this sugar-free broth 1 per cent of dextrose was subsequently added. The broth was made neutral to phenolphthalein. After inoculation with the water the tubes were incubated at 38° for 48 hours, gas readings being taken at 24-hour intervals. At the end of 48 hours all tubes showing the formation of gas were removed from the incubator, cooled to the room temperature and the absorption of CO_2 determined by the addition of a 2 per cent solution of NaOH. It has been found necessary to take precautions against incomplete absorption of the CO_2, especially where large tubes are used and the amount of gas formed is considerable.

The use of litmus-lactose-agar for plating water direct proved entirely unadapted to the conditions of our work, and frequently failed to reveal the presence of the colon bacillus, when the two methods above mentioned showed conclusively that this bacillus was present.

Although many other methods were experimented with and carefully compared during the course of the work, only findings obtained by the carbol-broth and dextrose fermentation methods are included in the following tables. A comparison of the two methods (Irons,* 1900) showed that while in the main the results tally closely, the carbol-broth

*American Public Health Association Report, 1900.

method is in general to be preferred for highly polluted waters, while for relatively pure waters the use of the fermentation tube direct appears to be a slightly more delicate test.

The interpretation of the results obtained by the respective methods demands some explanation, since the whole inquiry hinges upon the meaning of the records. It may be said at the outset that no attempt is made in this paper to record separately the occurrence of various members of the colon group of organisms or to pass judgment upon the sanitary significance attaching to the presence of various kinds of colon and paracolon bacilli. For reasons easily understood, such a subdivision of material would be entirely foreign to the problem under consideration. A general and arbitrary standard has of necessity been chosen. In the present state of uncertainty among bacteriologists regarding classification within the colon group, I have thought it best for the purposes of this investigation to adopt a somewhat comprehensive grouping and to include among "colon bacilli" (or "fecal bacteria") certain colon-like organisms showing a fundamental biological relationship. It should perhaps be expressly stated that the term "colon bacillus" is employed in this paper in this general sense, and is not used to designate a sharply defined single "species."

The carbol-broth method, as described above, has given results variously designed in the tables as +, — or ? The sign +, as here used, indicates that colonies have been isolated which gave the typical characters of B. coli in (1) Fermentation tube (dextrose broth); (2) Sugar-free Broth for indol; (3) Milk; (4) Gelatin.

The sign — is used to denote those cases where, upon plating in litmus-lactose-agar, after incubation in the carbol-broth, careful search failed to reveal any red colonies; under this head also are placed those cases, not very numerous, where pure cultures obtained from a red colony have failed to yield an excess of H in the fermentation tube.

In the doubtful class are included those instances sometimes encountered where the organism isolated from a red colony produces the typical mixture of gases in the fermentation tube, but fails to respond positively to one or two of the other characteristic biological tests, (2) being the determination most frequently at variance.

The results obtained by the dextrose-broth method are tabulated on the following basis: The sign + is used for those inoculations yielding a total gas-production of more than 20 per cent of the tube length and showing on absorption an appreciable excess of H. If pure cultures are isolated from such tubes, organisms possessed of the biological characters above cited will almost invariably be found. There is a mixture of different kinds of organisms in these tubes, and it is sometimes necessary to examine a great many colonies. When this has been done we have rarely failed to find the colon bacillus. The error involved in the assumption that a member of the colon group is always present in these cases is probably less than 5 per cent. The close agreement of the results obtained by this method with those reached by the carbol-broth method, which appears on the face to be more rigorous, lends further countenance to this view.

Under the sign — are included those determinations in which no gas or only a small amount of gas—less than 10 per cent—was produced. There is perhaps a larger measure of uncertainty regarding the determinations classified under this head; it is possible that the colon bacillus was present in some instances where no gas or only a slight amount was formed, but these cases must have been rare, since we have never been able to isolate the colon bacillus on gelatin or litmus-lactose-agar plates made from such tubes. An exception must, of course, be made to this statement in cases where sewage or highly polluted water has been inoculated into the fermentation tube without proper dilution, since in such cases it sometimes occurs that only a small amount of gas collects in 48 hours, the colon bacillus being apparently overgrown by other sewage bacteria.

In the doubtful class are placed those determinations giving a total gas-production of 10-20 per cent, and those with a total gas-production of more than 20 per cent and absorption test showing an appreciable excess of CO. The majority of the determinations so classified might fairly be regarded as negative, and I believe that an error of not more than 10 per cent would be incurred if this were done. I have preferred, howver, to adopt the more unequivocal arrangement.

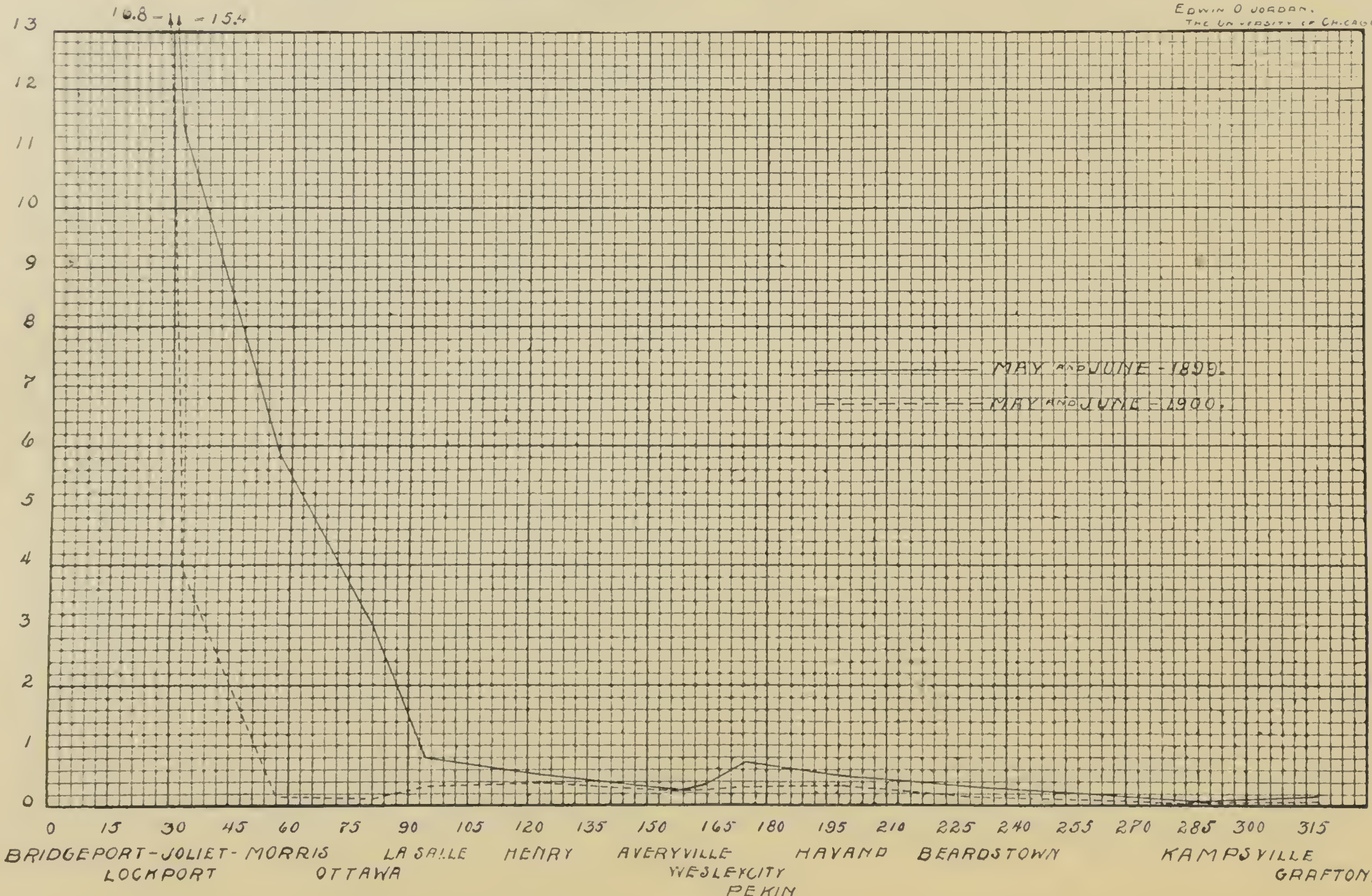
SPECIAL OBSERVATIONS AND EXPERIMENTS.

All the results that have been recorded in the foregoing tables have been obtained with transported samples of water, and, so far as the bacteriological side is concerned, they are unquestionably open to criticism on this score. It will be observed, also, upon reference to the detailed tables (tables 81-158) that at most stations the first examinations of water were made toward the end of the high-water period, when the numbers of bacteria were relatively higher than during the prolonged low-water period that followed. It was found impossible to arrange for the collections of water samples to begin at all the stations at the same time, although every effort was made to this end. At West Alton, owing to local difficulties, regular collections of Missouri River water were not instituted until July 27, so that the average given in the table is considerably lower than would have been the case if high-water figures for the Missouri had been obtained. The resulting averages for the Missouri River are hence considerably lower than those for the cross-section at the Chain of Rocks, and a comparison would be misleading.* The averages for all the stations on the Illinois River are, however, quite strictly comparable throughout.

As has been already stated, we have endeavored to supplement and control the results obtained from transported samples by numerous examinations made immediately at the point of collection. A series of samples collected at Bridgeport during the summer months and plated directly gave much larger counts than those resulting from the plating of the

*The average at the Inlet Tower at the Chain of Rocks for a period corresponding with that covered by the Missouri River analysis is 6,900 (Missouri River at West Alton, 8,200).

FREE AMMONIA-PARTS PER MILLION IN ILLINOIS RIVER.



transported samples. This is undoubtedly due to the destruction of bacterial life in the ice-packed sample.*

The correct average from May to August would unquestionably be upward of 2,000,000. The Lockport samples also, especially those for August, show in a marked degree the diminution due to ice-packing. The Morris samples for July 17, August 21, August 29, September 16 and October 16 also show the effect of transportation; a series of twelve samples collected at different times during these same months and plated *immediately* never afforded numbers so low as those recorded on these dates. On one occasion, for example, three samples of water were plated at Morris immediately after collection (initial temperature of the water, 28° C.), and gave respectively 535,000, 412,000 and 329,000 colonies per c.c. The bottles were packed in ice by the ordinary method and shipped at once to Chicago, where the samples were plated in the usual routine. The count obtained after transportation was, respectively, 54,500, 50,500 and 73,500. If it were necessary, examples of this sort might be multiplied indefinitely.

The diminution of numbers that takes place in ice-packed samples does not, however, result in a stable condition; after a time renewed bacterial reproduction sets in, even when the water is kept constantly at a low temperature; in fact, the numbers may rise to a point higher than that originally obtaining. This secondary multiplication occurred not infrequently in the waters from the lower end of the Illinois River and in those from the Mississippi River, since these waters had to be transported nearly 400 miles before reaching the laboratory. At Grafton, direct platings from the Illinois and Mississippi Rivers gave almost invariably lower counts than were obtained from the transported samples.

For example:

GRAFTON.		Platings Direct.			Platings from Same Bottles after Shipment.		
Illinois River	October	255	345	270	1,200	800	440
Mississippi River	"	2,850	2,020	....	4,500	1,500	...
Illinois River	November	225	160	325	1,500	830	580
Mississippi River	"	1,200	850	1,150	2,600	5,800	540

Multiplication of bacteria in transit was also shown in a marked degree in the samples collected at the Chain of Rocks, where, owing to the fact that the place of collection is difficult of access and a long boat-row is necessary, the packing in ice was unavoidably delayed, and the laboratory counts were uniformly higher than those made on samples plated immediately after collection. There is ample evidence, therefore, to support the view that during most of the period covered by these analyses the recorded averages range lower than the true figures as regards the collecting stations near Chicago, and are higher than is actually the case as regards the more distant points. The apparent difference between the number of colonies found, for instance, in the Illinois River at Averyville and Grafton may be explained in this way; the real difference is inconsiderable.

*c.f. Jordan and Irons. Notes on Bacterial Water Analysis. American Public Health Association Reports, 1899, XXV., p. 564.

It will be observed that the analyses of the water samples from Pekin and Wesley City show great irregularities from week to week. The peculiar local conditions are responsible for these marked fluctuations. The major part of the refuse poured into the river at Peoria enters on the right bank, but is deflected in various ways by sandbars and cross-currents, so that the sample from midstream at Wesley City sometimes shows great pollution, sometimes very little. The influence of these intricate and continually changing conditions is frequently evident in the Pekin samples as well. A cross-section taken at Wesley City on June 13, 1900, gave the following result:

	Free Ammonia.	Albuminoid Ammonia.	No. Colonies per c.c.
Right Bank	.504	.864	4.340.000
Center	.144	.248	40.000
Left Bank	.168	.240	2.400

Slight changes in the position of sandbars and in the height of water deflect the main mass of polluted water now to one side, now to the other, and so lead to sudden and marked fluctuations in the analyses. Even at Pekin the mingling is often far from complete.

Early in the investigation the importance of following, so far as practicable, the changes taking place in one and the same body of water was recognized, but the pressure of routine work rendered such studies few in number. The most important of these special investigations were carried out between Morris and Ottawa, where laboratory experience had shown us that a change took place that might be properly denominated as purification. Several series of observations were made upon this stretch of river, but as they all led to the same result, only the two most important will be here described.*

The first of these was carried out on October 7 upon a stretch of the Illinois River just below Morris. The day was bright and sunny, the temperature of the air being 7° C. at 6 o'clock in the morning and reaching 20.5° by midday. A slight breeze ruffled the surface of the water in the middle of the day, but was at no time strong. The river was very low (5 feet) and the current exceedingly sluggish. The upper cross-sections were taken at a point just above the Mazon River, the lower about three-fourths of a mile below the mouth of the Waupecan Creek. (Neither of these streams was contributing any water to the Illinois at this date). This stretch of river is almost exactly three miles in length. The rate of flow between the two points was determined by weighted floats and by the use of fluoresceïn solution, and was found to be very close to one-half mile per hour. Four series of cross-sections at hourly intervals were taken at the upper station (A), and these were followed by a similar series at the lower station (B), beginning six hours later. Platings were made within the hour. The samples designated as from the "right" and "left" banks, respectively, were taken midway between the shore and the

*I am greatly indebted to my chief assistant, Mr. E. E. Irons, for aid in the planning and conducting of these somewhat arduous observations, and I am glad to acknowledge that their accuracy and completeness are largely due to the signal zeal and ability with which he devoted himself to this work.

center of the stream. At A the river was about 150 yards wide, at B about 125.

The figures given for the number of colonies are the averages of counts of two separate platings.

UPPER STATION (A).

Hour		No. Colonies per c.c.	Turbidity (Hazen's scale).	Temp. Water °C.	Chlorine (parts per million).
6:15 A. M.	Right Bank......	500,000	.16	13.	....
"	Center...........	378,000	.12	13.	....
"	Left Bank.......	42,000	.075	13.	....
7:15 A. M.	Right Bank......	368,000	.17	13.	....
"	Center...........	344,000	.125	13.	....
"	Left Bank.......	35,000	.0775	13.	....
8:15 A. M.	Right Bank......	752,000	.16	13.5	91
"	Center...........	364.000	.11	13.	69
"	Left Bank.......	30,000	.0675	13.	45
9:15 A. M.	Right Bank......	554,000	.16	14.	....
"	Center...	472,000	.11	14.	....
"	Left Bank.......	79,000	.075	14.	....

LOWER STATION (B)

(Three miles below A).

Hour.		No. Colonies per c.c.	Turbidity (Hazen's scale).	Temp. Water °C.	Chlorine (parts per million).
12:15 P. M.	Right Bank......	480,000	.13	16.	....
"	Center...........	327,000	.15	16.	....
"	Left Bank.......	87,000	.05	16.5	....
1:15 P. M.	Right Bank......	281,000	.1475	16.	....
"	Center...........	102,000	.09	16.	....
"	Left Bank.......	19,000	.042	16.	....
2:15 P. M.	Right Bank......	400,000	.13	17.	87
"	Center...........	249,000	.09	16.	72
"	Left Bank.......	22,000	.045	16.	52
3:15 P. M.	Right Bank......	412,000	.136	17.	82
"	Center...........	416,000	.12	16.	78
"	Left Bank.......	11,000	.0433	17.	53

The averages may be tabulated as follows:

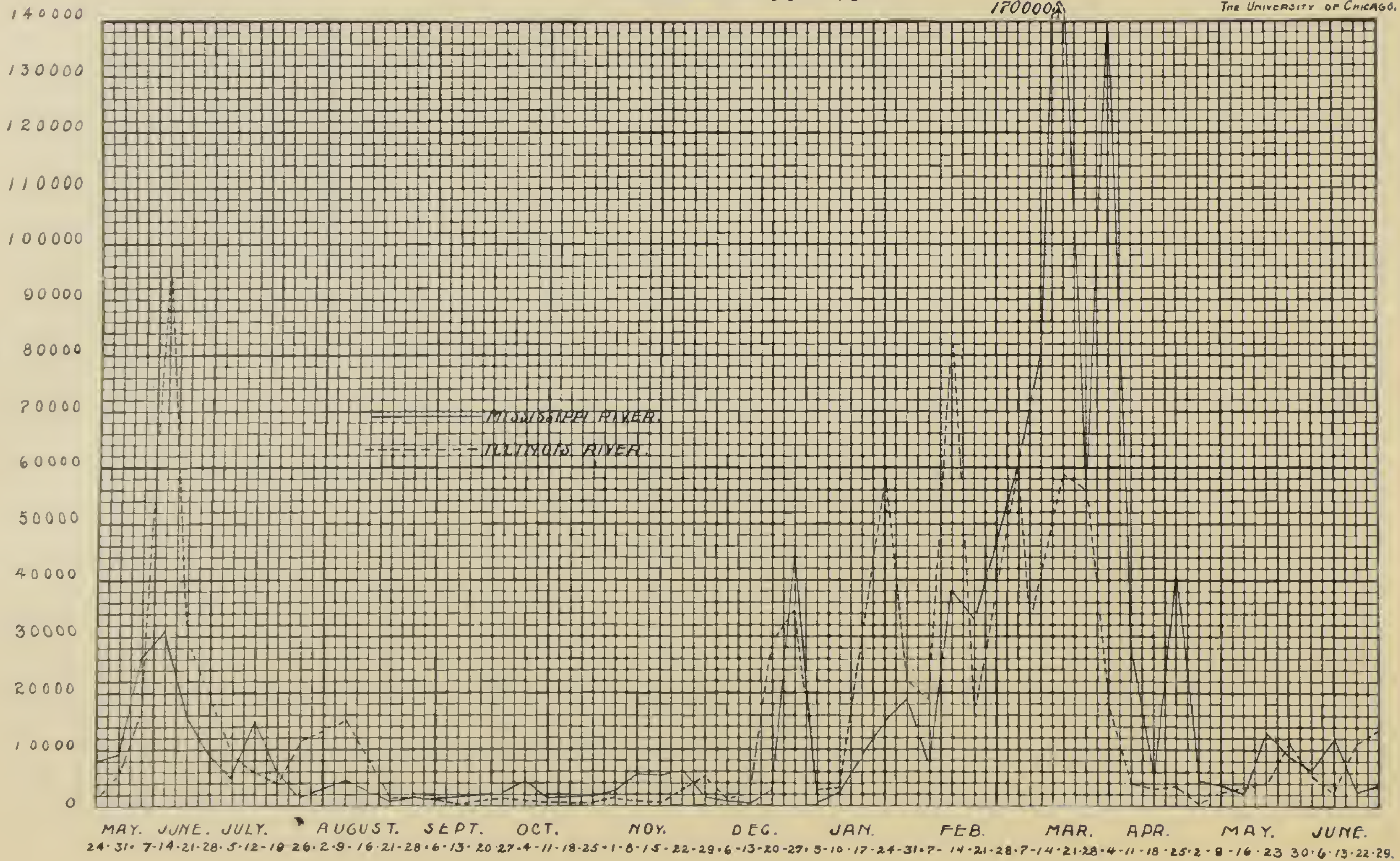
	Distance.	No. Colonies per c.c. Right Bank.	Center.	Left Bank.	No. of Hourly Analyses.
Upper Station (A)....	......	543,700	389,700	46,500	4
Lower Station (B)....	3 miles (6 hours).	393,250	273,500	34,750	4
Percentage Decrease..........................		27.6	29.8	25.3	

The chlorine determinations show that the mixing of the Kankakee water and the Desplaines is very incomplete both at the upper station (9.7 miles below the junction of the rivers) and at the lower, and this is entirely confirmed by the bacterial and turbidity cross-sections at the two points. Between A and B a great bacterial diminution occurs, and this in almost equal degree both along the seriously polluted right bank and along the comparatively uncontaminated left bank.

A second series of observations was carried out in a similar fashion upon a longer stretch of river. The distance from the regular collecting station at Morris to the regular collecting station at Ottawa (see map) is about 24 miles, and the rate of flow between the points averaged one-half mile per hour at the time our observations were made. A point midway between Morris and Ottawa was selected (Seneca) and a three-day series of observations was planned. The sun was wholly obscured by

NUMBER BACTERIA PER CUBIC CENTIMETER AT GRAFTON.

MAY-1899 — JULY-1900.



clouds during these three days, but no rain fell. The results are given as before in tabular form.*

UPPER STATION (MORRIS).

Hour.		No. Colonies per c.c.	Turbidity (Hazen's scale).	Temp. Water °C.	Chlorine (parts per millon).
7:15 A. M.	Right Bank.....	433,000	.153	7.	....
"	Center..........	337,000	.13	7.	....
"	Left Bank......	30,000	.046	7.	....
11:30 A. M.	Right Bank.....	177,000	.17	7.25	67.5
"	Center..........	145,000	.18	7.25	47.5
"	Left Bank......	17,000	.02	7.25	8.
2:00 P. M.	Right Bank.....	174,000	.15	3.	....
"	Center..........	131,000	.135	3.	....
"	Left Bank......	49,000	.05	3.	....

MIDDLE STATION (SENECA).

Hour			No. Colonies per c.c.	Turbidity (Hazen's scale).	Temp. Water °C	Chlorine. (parts per million).
9:00 A. M.,	Nov. 10.	Right Bank.....	134,000	*Less than .09, more than .07.	9.5	51
"	"	Center..........	47,000		9.5	44
"	"	Left Bank......	23,000		9.5	35
1:30 P. M.,	Nov. 10.	Right Bank.....	67,000	....	11.	... .
"	"	Center..........	52,000	....	11.	....
"	"	Left Bank......	52,000	....	11.	....

* Turbidity readings could not be taken accurately at this point and at Ottawa owing to presence of water weeds.

LOWER STATION (OTTAWA).

Hour.			No. Colonies per c. c.	Turbidity (Hazen's scale).	Temp. Water °C.	Chlorine (parts per million).
10:00 A. M.,	Nov. 11.	Right Bank.....	11,000	Less than .04.	9.5	49
"	"	Center..........	10,500		9.5	46
"	"	Left Bank......	3,900		9.5	43
1:00 P. M.,	Nov. 11.	Right Bank.....	12,000	....	9.5	....
"	"	Center..........	11,000	....	9.5	....
"	"	Left Bank......	18,000	....	9.5	....

The averages are as follows:

	Distance from Morris.	No. Colonies per c.c. Right Bank.	Center.	Left Bank.	No. of Hourly. Analyses.
Upper Station (Morris)..........	......	261,000	204,000	29,000	3
Middle Station (Seneca)........	12 miles. 24 hours.	100,000	49,000	35,000	2
Lower Station (Ottawa)	24 miles. 48 hours.	11,500	10,700	13,500	2

During this flow of 24 miles, therefore, the Illinois River became nearly free from the great mass of sewage bacteria with which it was originally laden. In fact, the bacterial content of the Illinois at Ottawa was not greatly in excess of that of the local tributary streams. The number of colonies found in the water of the Fox River on November 11 was 6,850 (av.), a number not much lower than that found in the Illinois (11,900).

* In connection with this series may be given the averages of the regular chemical determinations for the period between October 23 and November 20. These are:

Station.	No. Determinations.	Residue on Evaporation. Total.	Dissolved.	Suspended.	Oxygen Consumed. Total.	By Dissolved Matter.	By Suspended Matter.
Morris........	5	398	380	18.	10.7	8.4	2.3
Ottawa........	5	356	353.5	2.5	7.5	7.3	.2

Nitrogen as Free Ammonia.	Albuminoid Ammonia. Total.	Dissolved.	Suspended.	Nitrites.	Nitrates.
7.98	.860	.478	.382	.028	.340
6.6	.364	.315	.049	.382	.648

It was thought desirable to supplement these observations with another series made after the Sanitary Canal was opened, and accordingly, on May 24-26, 1900, another series of observations was made upon the stretch of river between Morris and Ottawa. The sun was partially obscured on May 25, but shone brightly on May 24 and 26; no precipitation occurred during the period.

UPPER STATION (MORRIS).

Hours.		No. Colonies per c. c.	Temp. Water °C.	Chlorine (Parts per million).
7:30 A. M., May 25.	Right Bank.............	45.000	15.5	20
" "	Center....................	74,000	17.5	13
" "	Left Bank..............	42,000	18.	8
9:30 A. M., May 25.	Right Bank.............	60,000	15.5	....
" "	Center....................	34,000	17.	....
" "	Left Bank..............	39,000	18.	....
11:30 A. M., May 25.	Right Bank.............	98,000	15.75	....
" "	Center....................	62,000	17.	....
" "	Left Bank..............	30,000	18.	....
*2:00 P. M., May 25.	Right Bank.............	70,000	16.	21
" "	Center....................	63,000	17.	14
" "	Left Bank..............	48,000	18.	6

* Samples were taken at this time and submitted to chemical examination with the following result:

	Right Bank.	Center.	Left Bank.
Total residue on evaporation..................................	232	246	308
Dissolved residue on evaporation..........................	230	244	285
Suspended residue on evaporation.........................	2	2	23
Chlorine..	21	14	6
Oxygen consumed—Total..	6.6	7.2	8.8
Oxygen consumed by dissolved matter.....................	6.1	6.0	4.7
Oxygen consumed by suspended matter....................	.5	1.2	4.1
Free ammonia...	2.28	1.08	.24
Albuminoid ammonia—Total.....................................	.256	.296	.240
Albuminoid ammonia—Dissolved...............................	.224	.224	.168
Albuminoid ammonia suspended...............................	.032	.072	.072
Nitrites..	.072	.050	.040
Nitrates	.4	1.1	.95

MIDDLE STATION (SENECA).

Hours.		No. Colonies per c.c.	Temp. Water °C	Chlorine (parts per million).
7:30 A. M., May 25.	Right Bank..............	13,800	16.5	19.5
" "	Center....................	11,700	......	16
" "	Left Bank................	4,100	......	13
9:30 A. M., May 25.	Right Bank..............	12,700	17.	....
" "	Center....................	14,000	......	....
" "	Left Bank................	16,000	......	....
11:30 A. M., May 25.	Right Bank..............	4,500	17.5	....
" "	Center....................	4,100	......	....
" "	Left Bank................	3,000	......	....
1:30 P. M., May 25.	Right Bank..............	5,500	18.5	16
" "	Center....................	6,700	18.8	15
" "	Left Bank................	13,100	19.7	12

LOWER STATION (OTTAWA).

Hours.		No. Colonies per c.c.	Temp. Water °C	Chlorine (parts per million)
8:30 A. M., May 26.	Right Bank..............	7,400	18.5	15
" "	Center....................	10,000	18.5	14
" "	Left Bank................	8,300	18.5	13
11:00 A. M., May 26.	Right Bank..............	8,100	19.	17
" "	Center....................	6,800	19.2	15
" "	Left Bank................	6,400	19.2	14
2:00 P. M., May 26.	Right Bank..............	9,000	19.5	17
" "	Center....................	6,300	19.5	16
" "	Left Bank................	1,200	20.	14

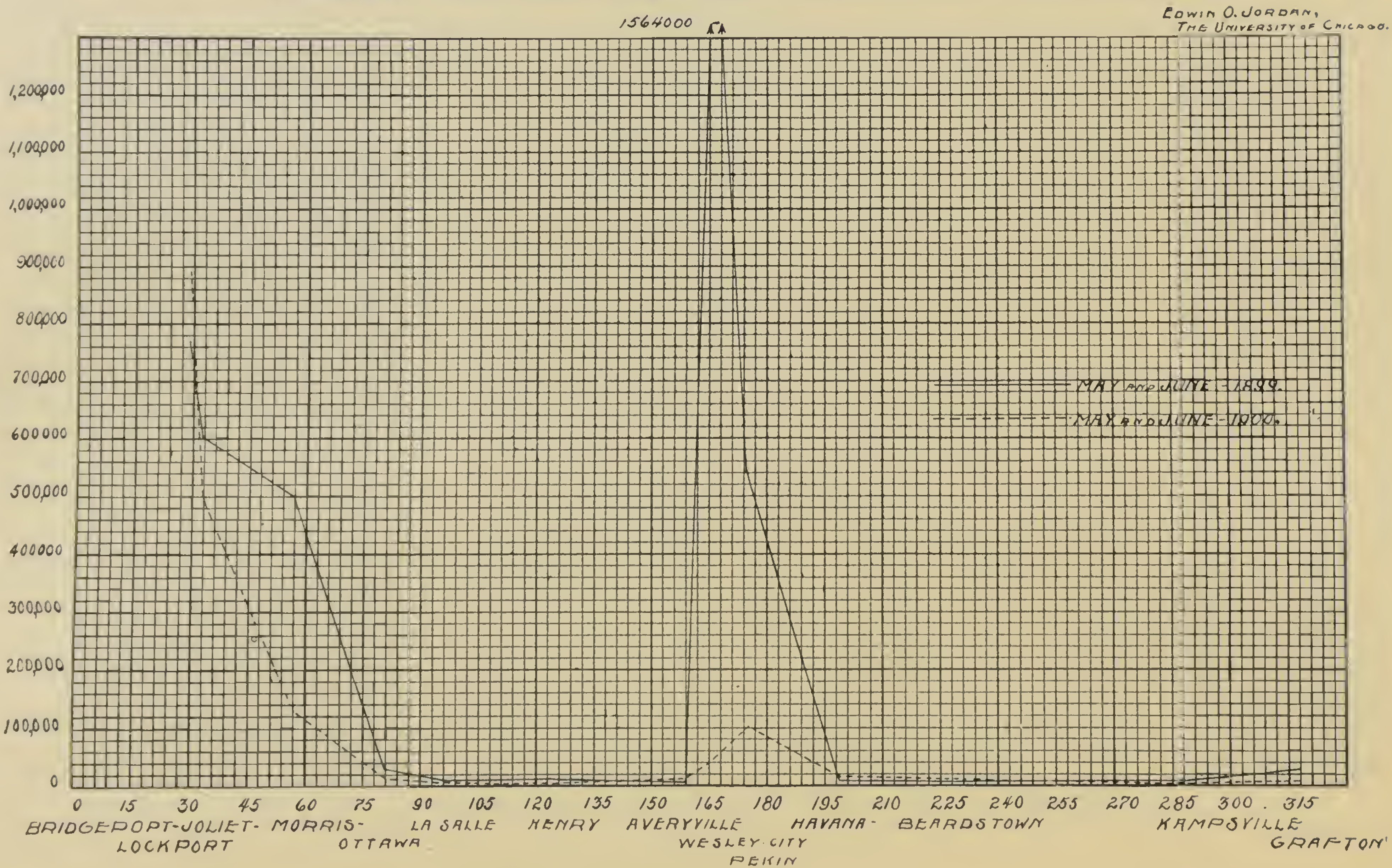
	Distance from Morris.	No. Colonies per c.c. Right Bank.	Center.	Left Bank.	No. of Separate Analyses.
Upper Station (Morris).......	......	68,200	58,200	39,800	4
Middle Station (Seneca)......	12 miles.	9,100	9,100	10,300	4
Lower Station (Ottawa)......	24 miles.	8,200	7,700	6,300	3

GENERAL SUMMARY.

In proceeding to summarize our results from the special point of view of this investigation, namely, the effect of the opening of the Sanitary Canal upon the condition of the Illinois and Mississippi Rivers, it is important to fix attention upon the main features of the problem. The particular comparison that it is desired to institute here is based, perforce, on a comparison of the period before the Sanitary Canal was opened with the period after the canal had been put in operation. This would at first sight seem to necessitate a comparison of the results obtained from May 1, 1899, to January 1, 1900, with those obtained from January 1, 1900, to July 1, 1900. It will be recognized, however, that such a comparison would be misleading, since it is well known that different seasons of year are not properly comparable with one another, owing to differences in the temperature of the water, the rate of flow and other controlling factors. (See, for instance, the diagram of the colony count in the Illinois and Mississippi Rivers at Grafton). Thus a comparison of the winter conditions of 1899-1900 with the summer conditions of 1899 could have no practical bearing upon the problem under consideration. Fortunately, there is a partial seasonal overlapping which permits direct and proper comparison of the conditions obtaining in the river waters before the Sanitary Canal was put into operation with those after that event. The analytical results secured during the months of May and June, 1899, may fitly be compared with those obtained *in the same months of the following year.* For this reason I shall present in the following diagrams a comparison of certain averages obtained during the first period (1899, canal not open) with the corresponding averages for the second period (1900, canal in operation).

It is believed that these diagrams will readily explain themselves; nevertheless, attention may be drawn to one or two features. The marked drop in chlorine in the upper part of the river during the second period witnesses to the greatly increased dilution of the sewage with the purer water of Lake Michigan. The increased *volume* of chlorine-laden water in the latter period, on the other hand, betrays itself in the increased amount of chlorine in the lower stretches of the river. The diagrams representing the relative amounts of free ammonia and albuminoid ammonia and the number of bacteria per cubic centimeter show similarly the effects of the increased dilution, and they also show that the change occurring in the significant substances in the water, both soluble and suspended, runs an essentially parallel course in the two years. For the period under consideration, therefore, there is substantial evidence that the amount of nitrogen in the form of free and albuminoid ammonia, and the number of bacteria per cubic centimeter, as shown by the ordinary plate count,

NUMBER BACTERIA PER CUBIC CENTIMETER IN ILLINOIS RIVER.



were at least no greater in the Illinois River at its mouth after the canal was opened than before that time. It is possible to go even further than this and to assert that the amount of the specially significant organic constituents has at most periods been no higher than is to be reasonably expected of river waters in this part of the country, as, in fact, is shown by the analyses of water from the tributary streams of the Illinois and from the Mississippi and Missouri rivers.

Is it, then, to be concluded that the discharge of the Chicago sewage into the valley of the Illinois has no effect whatever upon the Illinois River at its mouth beyond increasing the chlorine and other mineral constituents? The question cannot be answered summarily. While it is true that much of the nitrogen content of the original sewer is converted into gaseous compounds which escape from the water, it is also true that a large part of the ammoniacal compounds is oxidized to nitrates. After nitrification has become complete, or nearly so, the river water is consequently rich in nitrates and affords an especially favorable medium for the growth of microscopic algæ and water plants. These organisms abound in the lower stretches of the river during the summer months, and a certain proportion of the nitrogen originally present in the Chicago sewage unquestionably finds its way into their bodies. Waters containing large numbers of such organisms will of course show "high albuminoid ammonia or organic nitrogen" on analysis, although the nitrogen in this condition obviously has not the same sanitary significance as has the "organic nitrogen" of fresh sewage. Many of these organisms, however, either have definite cycles of development through which they pass, or else they perish at the approach of cold weather or in the presence of other injurious influences. The nitrogen in their dead bodies now begins a new series of changes and passes through the stages of "free ammonia" and "nitrites" to "nitrates." There it may again be taken up by a fresh set of plant organisms and enter into a new cycle of changes, only to terminate eventually in the mineralized nitrates.

In view of these well-known facts, it might reasonably be expected that the nitrogen-content of the Illinois at its mouth would be different from what would have been the case if no sewage from Chicago had ever passed into the river. The considerable amount of nitrogen appearing as "free ammonia" at Grafton at certain seasons of the year can best be interpreted in this way. It is reasonable to believe that it has not come direct and unchanged from the Chicago River, but has passed, perhaps several times, through the bodies of microscopic, chlorophyll-bearing plants. The completeness of nitrification as far up the river as La Salle is a strong reason for maintaining this view. The reappearance of high ammonias in the lower stretches, especially at the onset of cold weather, can only be understood by taking into consideration the cycle of nitrogen above outlined.

Considering the problem as a whole, it must be remembered that it is not so much the history of the nitrogen compounds that is significant, especially where conditions are so intricate as in the present instance, as the story of bacterial life. If the question be plainly put as to whether

typhoid bacteria or similar pathogenic microbes are likely to pass from Chicago to Grafton in the water of the Illinois River under any of the conditions prevailing during our investigation, it must be plainly answered that all the evidence that we have been able to secure is against such an occurrence. It has been already pointed out (pp. ————) that a study of the death rate among the colon bacteria added to the river water in sewage lends no countenance to the view that typhoid bacteria will survive passage down river. The facts indicate that the colon bacteria, which are present in such large numbers in Chicago sewage—undoubtedly in much larger numbers than typhoid bacilli—disappear almost completely in less than 150 miles' flow. Since all investigators are agreed that the colon bacillus is more hardy than its relative, the typhoid bacillus, and can live in water for a longer time, there is every reason for supposing that the latter microbe dies out with at least the same rapidity. Even were typhoid bacteria found in the water at the mouth of the Illinois, there are scores of communities to which they might certainly be more plausibly traced than to Chicago.

Respectfully submitted,

EDWIN O. JORDAN.

Professor of Bacteriology, University of Chicago.

April 1, 1901.

REPORT OF THE UNIVERSITY OF ILLINOIS

BY

PROF. A. W. PALMER, S. C. D.

ARTHUR R. REYNOLDS, M. D., Director of Streams Examination, Chicago, Ill.

Dear Sir:—Herewith I submit a report upon the chemical and bacterial analyses conducted at the University of Illinois in behalf of the Sanitary District of Chicago. These analyses cover the period extending from the latter part of April, 1899, to the beginning of October, 1900, and include the chemical and bacterial examination of about three thousand samples.

Regular weekly analyses have been made of water samples collected from the Illinois and Michigan Canal, from various parts of the Desplaines and Illinois rivers, from certain of the principal tributaries of the Illinois River, from the Mississippi River at a number of different points near Alton and St. Louis, from the Missouri River and from the St. Louis water supply. During a portion of the time three or more samples a week were collected at several important points.

The points at which the samples were taken were determined upon in a general way at the conference held in your office upon March 15, 1899; they were more precisely located by Professor Jordan and myself just before the inauguration of the work.

The reasons for the selection of these particular places are indicated below.

The report which I submit is in three parts: Part A, relating briefly to the inauguration of the investigation and the selection of the points of collection. etc.; Part B, relating to the chemical analyses, including the determination of dissolved oxygen, and Part C, by Professor T. J. Burrill, relating to the bacterial examinations.

The report of the chemical examinations includes:

First—Complete tables of the data of the analyses; the few blanks which appear in the tables being due either to the breakage of a bottle and the loss of an entire sample, or to the fact that some mishap during the course of the examination has resulted in the loss of a portion of the sample which could not be replaced.

Second—Tables of averages of the results for various periods.

Third—Plates which exhibit graphically the general results as expressed in the averages of the tables.

In the consideration of the data of the chemical examinations, I

have briefly indicated the origin, the characteristics and the significance of some of the more important substances determined, in the hope that such intelligent laymen as are really interested in the problems involved in these investigations may thereby be enabled in some measure to understand the significance of the numerical data and the various lines of the plates.

Throughout the investigations I have been very ably assisted by Mr. R. W. Stark, B. S., and during the greater part of the time by Mr. C. V. Millar, M. S. The continued interest, the skill and the indefatigable zeal of these two gentlemen in conducting most of the routine work of these examinations deserve special commendation. During much of the time covered I have been further assisted by Mr. F. C. Koch, M. S.; Mr. E. P. Walters, B. S., and Mr. A. L. Marsh.

INAUGURATION OF THE EXAMINATIONS.

At the conference held in Chicago, March 15, 1899, at which there were present Mr. Isham Randolph, Chief Engineer of the Sanitary District; Dr. Arthur R. Reynolds, Commissioner of Health of Chicago and Director of Streams Examinations for the Sanitary District of Chicago; Dr. R. W. Riley, Assistant Commissioner of Health of Chicago; Dr. Adolph Gehrmann, Director of the Municipal Laboratory of Chicago; Professor E. O. Jordan, representing the University of Chicago, and Professor A. W. Palmer, representing the University of Illinois, the general plan and scope of the investigations were discussed, and it was decided that samples of water for analysis should be taken from the Illinois River and certain of its tributaries, the Missouri River and the Mississippi River, at a number of different points between Chicago and St. Louis or thereabouts.

It was decided that the work should be done in triplicate, i. e., that three sets of samples should be taken simultaneously at each place each week, and that independent analyses of these three sets of samples should be made by the three institutions represented: that is, that one set of samples should be analyzed at the University of Chicago, one at the Municipal Laboratory of Chicago and one at the University of Illinois.

At this conference the task of visiting and precisely locating the various points at which the samples should be taken, and of selecting, appointing and instructing persons who could be relied upon to collect and ship the samples satisfactorily, was assigned to Professor Jordan and Professor Palmer, who shortly thereafter inspected the localities in question and personally gave instructions and demonstrations to the collectors whom they selected for the work. All of the points except two, namely Kampsville, upon the Illinois River, and Chandlerville, upon the Sangamon River, were visited by Professor Jordan and Professor Palmer conjointly, and each of the more important points has been repeatedly visited by them, either conjointly or separately, at various times during the period covered by the series of examinations.

Each collector was personally instructed in the manner of making

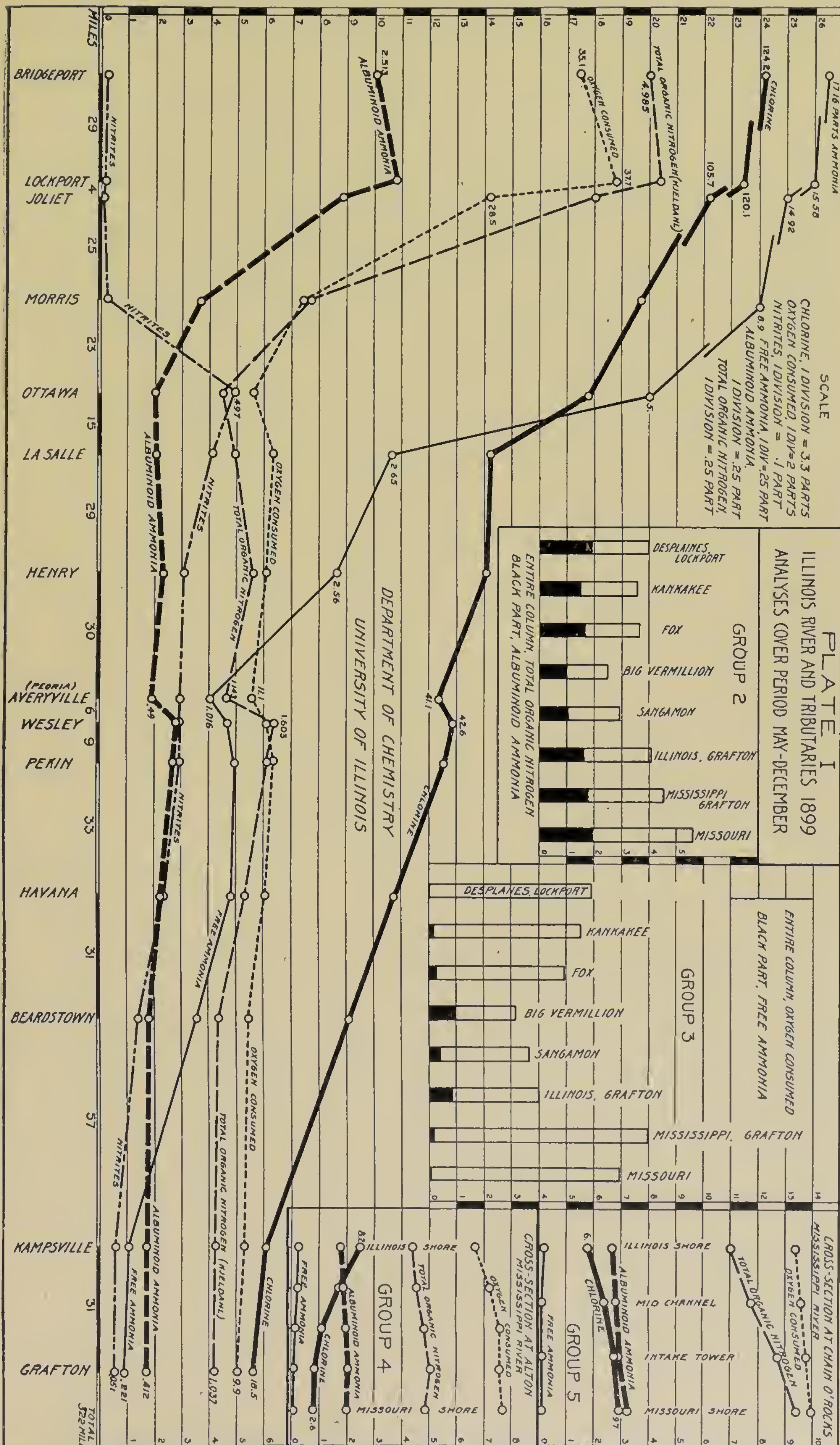


PLATE I
ILLINOIS RIVER AND TRIBUTARIES 1899
ANALYSES COVER PERIOD MAY-DECEMBER
SCALE
CHLORINE, 1 DIVISION = 3.3 PARTS
OXYGEN CONSUMED, 1 DIV=2 PARTS
NITRITES, 1 DIVISION = .1 PART
FREE AMMONIA, 1 DIV=.25 PART
ALBUMINOID AMMONIA, 1 DIVISION = .25 PART
TOTAL ORGANIC NITROGEN, 1 DIVISION = .25 PART
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
MILES
BRIDGEPORT
LOCKPORT
JOLIET
MORRIS
OTTAWA
LA SALLE
HENRY
(PEORIA) AVERYVILLE
WESLEY
PEKIN
HAVANA
BEARDSTOWN
KAMPSVILLE
GRAFTON
TOTAL 322 MILES
GROUP 2
ENTIRE COLUMN, TOTAL ORGANIC NITROGEN
BLACK PART, ALBUMINOID AMMONIA
DESPLAINES, LOCKPORT
KANKAKEE
FOX
BIG VERMILLION
SANGAMON
ILLINOIS, GRAFTON
MISSISSIPPI GRAFTON
MISSOURI
GROUP 3
ENTIRE COLUMN, OXYGEN CONSUMED
BLACK PART, FREE AMMONIA
GROUP 4
CROSS-SECTION AT ALTON MISSISSIPPI RIVER
ILLINOIS SHORE
MISSOURI SHORE
GROUP 5
CROSS-SECTION AT CHAIN O'ROCKS MISSISSIPPI RIVER
MID CHANNEL
INTAKE TOWER
CHLORINE
OXYGEN CONSUMED
NITRITES
FREE AMMONIA
ALBUMINOID AMMONIA
TOTAL ORGANIC NITROGEN (KJELDAHL)
17.16 PARTS AMMONIA

the collections and the care to be exercised in handling the bottles and samples. He was taken to the precise spot at which he should make the collection, and the necessity of making every collection at that particular spot was impressed upon him. Moreover, he was shown precisely *how* to make the collection, stopper and seal the bottles and pack them for shipment. He was impressed with the importance of putting plenty of ice around the bacterial sample and arranging everything for the utmost promptness of shipment by the quickest route. He was provided with metallic seals and the proper heavy tool for pressing them. In addition to these instructions, a description was printed upon the back of the certificate which he was required to fill out and attach to each sample. A copy of the certificate is given below:

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SAMPLE OF WATER.

Fill this out and place in Shipping Envelope. Fasten to larger bottle by end of wire seal.

Sample No................ ....M.
(DATE.) (TIME.)

From..

Collected by..

Height of Water........................Temperature of Water........degrees F.

Direction of Wind......................Temperature of Air...........degrees F.

Rain ....
(NOTE AS TO ABSENCE OR OCCURRENCE OF RAIN SINCE TAKING LAST SAMPLE.)

Remarks: ....
(AS TO PASSING VESSELS; CHANGES IN CURRENTS.)

....

....

(OVER.)

Instructions for Collecting and Sending Samples of Water for Analysis.

The outfit for obtaining water samples consists of two parts. The large gallon bottle is for the chemical sample, and the small four-ounce bottle is for the bacterial sample. The large and the small bottle together constitute one sample or set. The two bottles must be filled at the same time, and at the same place, and in the same general manner. They must then be placed in their respective compartments of shipping cases for transportation.

In filling the bottles, the stoppers should be taken out only when the spot from which the water is to be taken is reached. The bottle is immersed with the stopper in place about one foot below the surface and is filled, leaving about one or two inches air space. The large and small bottles are then immediately sealed by placing the rubber cloth over the stopper and drawing the wire seal with the number for the sample tight about the neck. The small bottle is to be placed in the smaller can and the lid pressed down. It is then to be packed in ice within the large can. The card in the shipping envelope is then to be filled out and attached to the neck of the larger bottle. The bottles should not be filled until just before the time for delivery at the express office.

As series of samples are to be sent to different laboratories, all of the bottles should be filled at the same time, and at the same place, and the different sets placed together as described.

The certificate of collection on the reverse side is to be filled out completely in every case.

(OVER.)

The points determined upon and the collectors selected were as follows:

POINTS AT WHICH SAMPLES WERE TAKEN.

(See map of localities on page 8.)

No. 1—At Bridgeport samples were taken from the Illinois and Michigan Canal a short distance below the pumping station. Before the opening of the Drainage Channel the fluid pumped from the Chicago River into the old canal at this point constituted by far the major part of Chicago's sewage, and contained, in addition to house sewage, an enormous amount of manufacturing wastes, including those from stock-yards, soap factories, rendering establishments, metallurgical works, gas works, etc., etc.

No. 1a—After the opening of the Drainage Channel in January, 1900, samples were collected from it also at Bridgeport, at the crossing of Kedzie Avenue.

The collections at this point were made by Mr. Joseph Weis.

No. 2—Lockport. The fluid pumped into the Illinois and Michigan Canal flows sluggishly from Bridgeport to Lockport, a distance of about 29 miles. Generally there is practically no dilution and no notable additional pollution of the water. At certain seasons of the year, however, storm water enters the canal in somewhat large quantity. The chemical impurities in the water of the old canal change but very little between Bridgeport and Lockport, owing, probably, to the very great concentration of the sewage, and possibly, too, to the fact that some of the manufacturing wastes retard the incipient decompositions.

No. 3—At Lockport there is some discharge from the Illinois and Michigan Canal into the Desplaines River, a small stream of extremely variable flow. A sample of water was collected from the Desplaines River at a point beside the old stone bridge, a short distance above the Norton Mills, where the first discharge from the old canal into the river takes place. The Desplaines River itself receives some sewage from various suburban towns along its banks above this point. After the opening of the Drainage Channel (January, 1900) the sample collected at this point consisted of a mixture of Desplaines River water with the water of the Drainage Channel, of which mixture the water of the latter amounted to from 25 to 99 per cent, the former only occasionally, in time of freshet, the latter during the last quarter of the year, the average for the entire year being 91¾ per cent for 1901 and 89.9 per cent for 1900.

No. 3a—After the opening of the Drainage Channel samples were collected at Lockport from it also, at a point just above the controlling works, where the discharge from the Drainage Channel into the Desplaines River occurs.

All collections at Lockport were made by Mr. William O'Brien, express agent.

No. 4—The Desplaines River, at Joliet, just above the town. At this point, four miles below Lockport, the Illinois and Michigan Canal and the Desplaines River unite to form a large basin, the canal from this point on passing down beside the west bank of the Desplaines River. Before the opening of the Drainage Channel it was at this point that the sewage in the old canal received its first notable dilution. During the greater part of the year, particularly the summer and autumn seasons, this dilution was very slight, but in the earlier or flood seasons of the year the flow in the Desplaines River at Joliet would at times amount to as much as three or four hundred thousand cubic feet per minute, and the dilution would be correspondingly great.

The average flow from the Illinois and Michigan Canal was formerly about 45,000 cubic feet per minute, but since the opening of the Drainage Channel the flow from the old canal has been reduced to an average of 26,700 cubic feet per minute in 1900 and about 13,800 cubic feet per minute in 1901. The sample of water was taken in the basin just above the town.

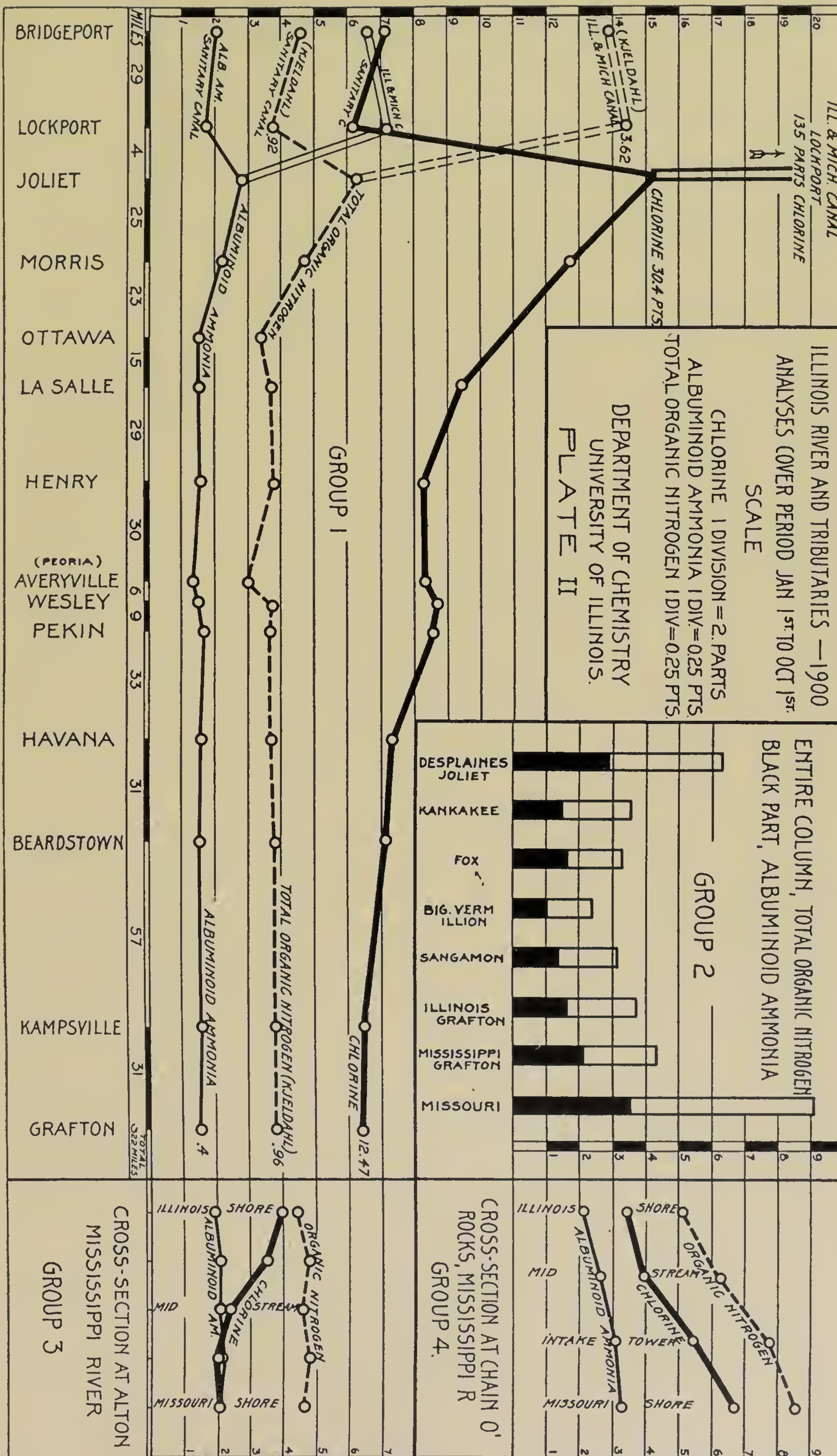
No. 5—The Desplaines River at Joliet, just below the town. A large part of the sewage of Joliet, i. e., that from all of the town lying on the east side of the river, enters the Desplaines directly at Joliet. In addition to house sewage, this includes also the wastes from various manufactories. Late in the season of 1899, i. e., in August, the bed of the Desplaines River below Joliet was almost entirely dry, as the flow was practically all carried by the canal. The collections from the river below the town were, consequently, discontinued at this time, and for some time afterward the samples were taken from the canal itself, but at a corresponding point below the town.

The collections at Joliet were made by Mr. Raymond Hurd.

No. 6—The Kankakee River at Wilmington. Formerly the first really considerable dilution of the Chicago sewage resulted from the union of the sewage-laden Desplaines River with the Kankakee River. The mean discharge from the Kankakee River for the year is estimated at three hundred thousand cubic feet per minute, but the flow is subject to exceeding great variations, and at certain seasons it becomes almost negligible. The sample taken at Wilmington gives a fair idea of the composition of this water. The organic matters contained in the Kankakee River water are mainly of vegetable origin, and are derived from the extensive marshes which are drained by this stream. Some house sewage also enters the stream at Kankakee (population, 13,595), about 20 miles above Wilmington and at several other smaller towns along its course.

The collections at Wilmington were made by Mr. R. P. Elliott, express agent.

No. 7—The Illinois River at Morris. This is the first collecting station upon the Illinois River proper, and is 9½ miles below the junction of the Kankakee and the Desplaines rivers. The river at this point is practically a more or less complete mixture of Chicago sewage and Kankakee River water. In a dry season, like that of 1899, the propor-


ILLINOIS RIVER AND TRIBUTARIES —1900
ANALYSES COVER PERIOD JAN 1ST TO OCT 1ST.
SCALE
CHLORINE 1 DIVISION = 2. PARTS
ALBUMINOID AMMONIA 1 DIV. = 0.25 PTS.
TOTAL ORGANIC NITROGEN 1 DIV = 0.25 PTS.
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS.
PLATE II
GROUP 1
GROUP 2
ENTIRE COLUMN, TOTAL ORGANIC NITROGEN
BLACK PART, ALBUMINOID AMMONIA
BRIDGEPORT
LOCKPORT
JOLIET
MORRIS
OTTAWA
LA SALLE
HENRY
(PEORIA)
AVERYVILLE
WESLEY
PEKIN
HAVANA
BEARDSTOWN
KAMPSVILLE
GRAFTON
MILES
TOTAL 322 MILES
ILL. & MICH. CANAL
LOCKPORT
135 PARTS CHLORINE
CHLORINE 30.4 PTS.
ALB. AM.
SANITARY CANAL
(KJELDAHL)
SANITARY CANAL
SANITARY C.
ILL & MICH C.
(KJELDAHL)
ILL. & MICH CANAL
3.62
.92
ALBUMINOID AMMONIA
TOTAL ORGANIC NITROGEN
TOTAL ORGANIC NITROGEN (KJELDAHL)
CHLORINE
.4
.96
12.47
DESPLAINES JOLIET
KANKAKEE
FOX
BIG. VERM ILLION
SANGAMON
ILLINOIS GRAFTON
MISSISSIPPI GRAFTON
MISSOURI
CROSS-SECTION AT ALTON
MISSISSIPPI RIVER
GROUP 3
CROSS-SECTION AT CHAIN O' ROCKS, MISSISSIPPI R
GROUP 4.
ILLINOIS
SHORE
MID
STREAM
MISSOURI
SHORE
ALBUMINOID AM.
CHLORINE
ORGANIC NITROGEN
INTAKE
TOWER
ALBUMINOID AMMONIA

tion of Kankakee River water may be very small, and it is always comparatively small in the latter half of the year. The average volume of the Kankakee River was formerly four or five times that of the Desplaines River; since the opening of the Drainage Channel it is about equal, i. e., the average flow of each for the year is approximately 300,000 cubic feet per minute. Owing to the fact that the mixing at Morris is quite incomplete, the chlorines given in the various tables do not show very clearly the relative proportions of sewage and of Kankakee River water.

The collections at Morris were made by Mr. J. W. Miller.

No. 8—The Fox River at Ottawa. The Fox River constitutes another great diluting factor. The area drained by the Fox River, 2,697 square miles, is about one-half that drained by the Kankakee River, 5,146 square miles, but the volume of discharge is relatively large. The sample collected from this stream was taken at a point above the town and above the aqueduct which carries the water of the Illinois and Michigan Canal across the stream. The Fox River receives the sewage and manufacturing wastes of a number of towns, of which Elgin (population, 1900, 22,433) and Aurora (population, 24,147) are the largest.

No. 9—The Illinois River at Ottawa. Collection at this point was made at about a mile above the entrance of the Fox River and above the point where town sewage enters, and shows the change resulting from 24 miles' flow without notable dilution and without material addition of impurities, but the mixing of the discharges from the Desplaines and the Kankakee is not yet complete at this point, 33 miles below the confluence of these two streams.

The collections at Ottawa were made by Mr. Lester Horan.

No. 10—The Big Vermilion River at La Salle. This is another important tributary draining an area of 1,413 square miles and receiving sewage from the towns of Streator and Pontiac, as well as the wastes from a number of cement factories situated upon its banks a short distance above its mouth. The sample was collected about one-half mile within the mouth of the stream, which is three miles above the bridge at La Salle.

No. 11—The Illinois River at La Salle. The sample at La Salle was taken beside the wagon bridge which crosses the stream at this point. This is about three miles below the mouth of the Big Vermilion, at a point where comparatively little of the sewage of La Salle has entered the stream, and above the point at which the Illinois and Michigan Canal, which receives most of the house sewage of La Salle, finally discharges into the river.

No. 12—The Illinois and Michigan Canal at La Salle. The sample was taken from the lower basin of the canal, just above the point at which it discharges into the river and where it has received considerable of the sewage of the town of La Salle.

The collections at these three points, i. e., Nos. 10, 11 and 12, were made by Dr. William A. Fraser of La Salle.

No. 13—The Illinois River at Henry. Between La Salle and Henry there is comparatively little dilution, but the river receives the final discharge from the Illinois and Michigan Canal and most of the sewage of La Salle in addition to the sewage of Peru. The sewage from both of these towns includes considerable manufacturing wastes from zinc works, fertilizer works, etc., etc., in addition to house sewage. The sample at Henry was taken above the dam.

The collection at Henry was made by Mr. H. McCune, keeper of the state lock.

No. 14—The Illinois River at Averyville. The collecting station was at the bridge over the Narrows, about three miles above the city of Peoria. The results obtained here show the degree of purity, both bacterial and chemical, attained during the flow of 130 miles from Lockport, the point at which the sewage is first discharged into the Desplaines and Illinois River Valley.

The collections were made by Mr. Robert Martin, engineer, under the supervision of the superintendent of the Peoria Waterworks, the wells and pumping station of which are located quite near the bridge.

No. 15—The Illinois River at Wesley City. The city of Peoria (population, 1900, 56,100) contributes a large amount of organic refuse to the river between points No. 14 and No. 15. Not only does the main part of the house sewage enter, but there is also a great addition of manufacturing wastes and distillery slops and discharges from glucose factories and the drainage from extensive cattle sheds and stockyards, The Wesley City collection was made about four miles below this outpour of pollution. The amount of the Peoria pollution varies greatly at different seasons in the year and at different hours of the day, a fact that aids in explaining irregularities and fluctuations, particularly in the number of bacteria. Kickapoo Creek discharges into the Illinois River just above this point; it carries considerable organic matters derived from distilleries which drain to it. At certain seasons of the year its flow is considerable, and as the distance from its mouth to the collecting point, Wesley City, is not great, considerable variations are often due to the incomplete mixing of its waters with those of the Illinois.

No. 16—The Illinois River at Pekin. The samples were collected at the bend in the river several hundred yards below the last point at which sewage is discharged into the stream. The house sewage of Pekin, the discharges of distillery slop and those from large cattle-sheds and stockyards, glucose factories, fertilizer works, and so on, enter the river here.

The collections at Pekin and at Wesley City were made by Mr. D. H. Jansen of Pekin, county surveyor of Tazewell County.

No. 17—The Illinois River at Havana. The collection here was made above the town and above the mouth of the Spoon River. The results of the examinations show the changes which take place in the impurities contained in the water during the flow of 30 miles from Pekin to this point. Between Pekin and this point there is no notable addition

of impurities, and the dilution from small tributaries is ordinarily comparatively slight.

The collections at Havana were made by Mr. H. G. Heberling.

No. 18—The Sangamon River at Chandlerville (drainage area, 5,592 square miles). The sewage of various towns, some of them of considerable size, enters this stream at various points along its course, notably that of Springfield, with a population of 34,159 (1900), which enters about 45 miles above Chandlerville.

The collections at Chandlerville were made by Mr. E. O. Spink.

No. 19—The Illinois River at Beardstown. Little organic impurity is added to the river below the mouth of the Sangamon. The examinations of the water at Beardstown serve to show the changes wrought by the natural purifying processes and by the mixing of the Illinois River water with the waters of the Sangamon River.

The collections at Beardstown were made by Mr. G. W. Barneycastle, under the supervision of Mr. J. A. Carney of the C., B. & Q. Railroad.

No. 20—The Illinois River at Kampsville. The sample at this point was taken just above the United States dam, which is about 30 miles above the mouth of the river. There is no notable discharge of impurities into the river between Beardstown and Kampsville, and, indeed, between Beardstown and Grafton, but a number of small streams discharge into the Illinois between these points.

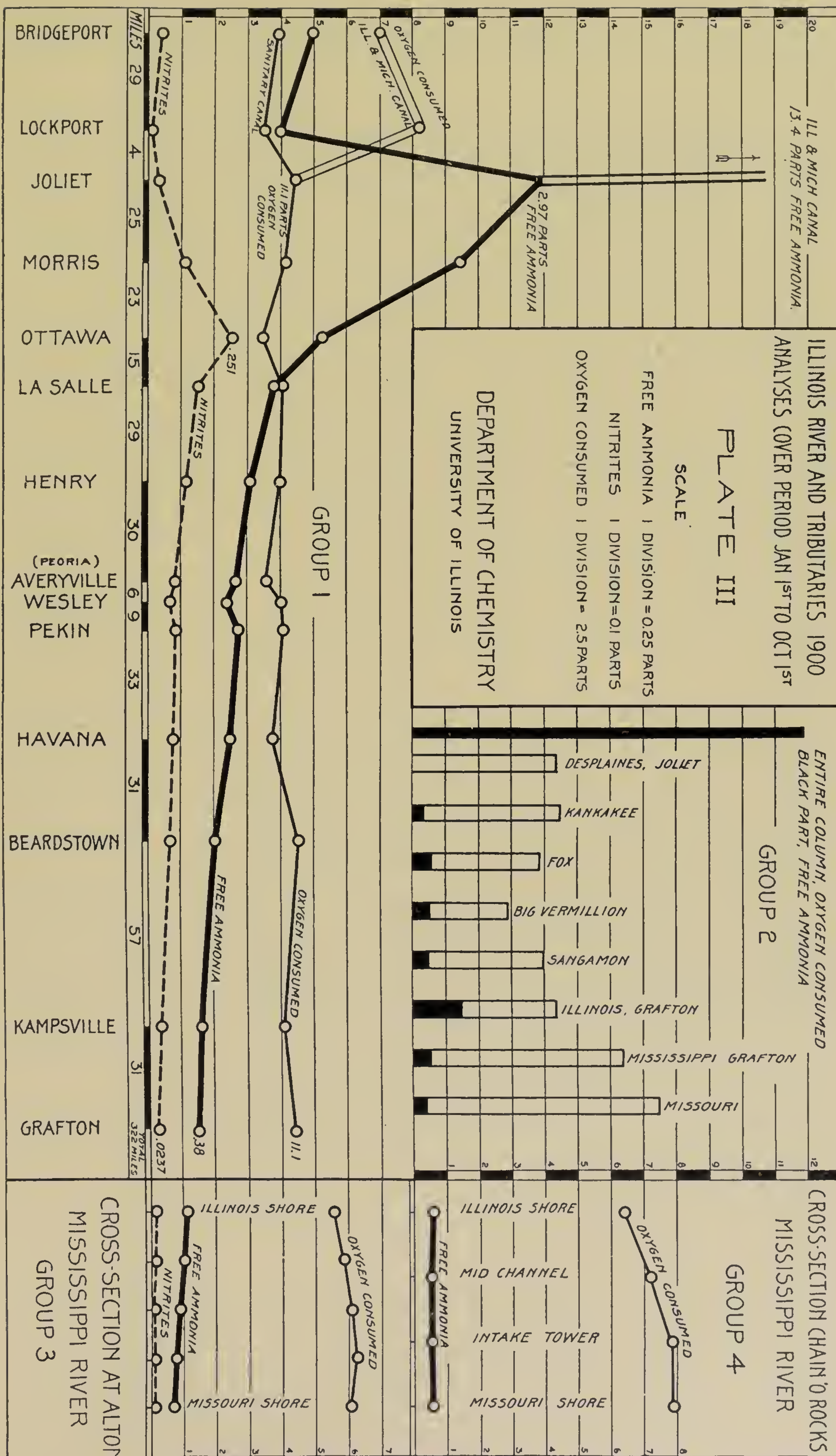
The collection at Kampsville was made under the direction of Mr. C. V. Brainard, assistant United States engineer, who is in charge of the dam and of the work of the improvement of the Lower Illinois River.

No. 21—The Illinois River at Grafton. A sample of water was taken at a point about two miles within the mouth of the Illinois River and above the point at which any mixing of the water of the Mississippi with the water of the Illinois occurs.

No. 22—The Mississippi River at Grafton. A sample was taken from mid-channel of the Mississippi River at a point above the mouth of the Illinois and where there can be no mixing of the Illinois River water with that of the Mississippi.

The collections at Grafton were made by Mr. B. F. Robinson.

Nos. 23-27—Mississippi River at Alton. At Alton five samples of water were taken from the Mississippi River above the town and at points opposite the new pumping station of the Alton waterworks, as follows: The first sample at 100 feet from the Illinois shore, the second at one-fourth distance from the Illinois shore across stream, the third sample from mid-channel, the fourth sample at one-fourth distance from the Missouri shore across stream, and the fifth sample at 100 feet from the Missouri shore. No sewage from Alton enters the river within half a mile or more of this point, and the drainage from the two or three hamlets between Alton and the mouth of the Illinois is so inconsiderable that the data from these cross-section samples would seem to fairly represent the amount of mixing of the Mississippi and the Illinois River


ILLINOIS RIVER AND TRIBUTARIES 1900
ANALYSES COVER PERIOD JAN 1ST TO OCT 1ST
PLATE III
SCALE
FREE AMMONIA 1 DIVISION = 0.25 PARTS
NITRITES 1 DIVISION = 0.1 PARTS
OXYGEN CONSUMED 1 DIVISION = 2.5 PARTS
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
ILL & MICH CANAL 13.4 PARTS FREE AMMONIA.
GROUP 1
BRIDGEPORT
LOCKPORT
JOLIET
MORRIS
OTTAWA
LA SALLE
HENRY
(PEORIA) AVERYVILLE
WESLEY
PEKIN
HAVANA
BEARDSTOWN
KAMPSVILLE
GRAFTON
MILES 29 4 25 23 15 29 30 6 9 33 31 57 31 TOTAL 322 MILES
NITRITES
SANITARY CANAL
ILL & MICH. CANAL
OXYGEN CONSUMED
11.1 PARTS OXYGEN CONSUMED
2.97 PARTS FREE AMMONIA
.251
FREE AMMONIA
.0237
.38
11.1
GROUP 2
ENTIRE COLUMN, OXYGEN CONSUMED
BLACK PART, FREE AMMONIA
DESPLAINES, JOLIET
KANKAKEE
FOX
BIG VERMILLION
SANGAMON
ILLINOIS, GRAFTON
MISSISSIPPI GRAFTON
MISSOURI
CROSS-SECTION AT ALTON
MISSISSIPPI RIVER
GROUP 3
ILLINOIS SHORE
MISSOURI SHORE
CROSS-SECTION CHAIN O'ROCKS
MISSISSIPPI RIVER
GROUP 4
MID CHANNEL
INTAKE TOWER

waters during the flow from Grafton to Alton, a distance of about 17 miles.

The collections at Alton were made by Mr. George Brooks.

No. 28—The Missouri River at West Alton. The condition of the Missouri River just before it mixes with the Mississippi is shown by the collections at this point. The samples were taken just beside the C., B. & Q. Railway bridge at Bellefontaine.

The collections at West Alton were made by Mr. James Mathews.

Nos. 29-32—The Mississippi River at "The Chain of Rocks." At Mitchell, or "The Chain of Rocks" that is, at the point where the pumping station of the St. Louis waterworks is situated, four samples from the Mississippi River were taken, as follows: The first 400 feet from the Illinois shore, the second from mid-channel of the Mississippi River, i. e., about midway between the intake tower of the St. Louis waterworks and the Illinois shore; the third sample immediately beside the intake tower of the St. Louis waterworks pumping plant, and the fourth sample at about 400 feet from the Missouri shore, between the intake tower and the Missouri shore.

The collections at this place were made by Mr. Henry Atkins, a prominent farmer residing upon the banks of the Mississippi at this point, the nearest railway station being at Mitchell, Ill., about four miles away.

No. 33—St. Louis Tap Water. The water drawn from the river at the intake at the "Chain of Rocks" is passed through several settling basins before it is delivered to the consumer in the city. The grosser effect of subsidence is shown by the great reduction of suspended matters from 876 parts at the intake tower to 98 parts in the tap water as delivered in the city in 1899 and 1,330 and 97 respectively in 1900.

Nos. 34-38—Mississippi River at Jefferson Barracks. A cross-section of the Mississippi River was made six miles below the city of St. Louis, i. e., nine miles below the Eads bridge, for the purpose of determining the effect produced upon the Mississippi River water by the addition of sewage and manufacturing wastes of the city.

The collections at Jefferson Barracks and from the St. Louis tap were made by Mr. Emil A. Appel and Mr. August Johnson.

The collectors at La Salle, Averyville, Kampsville, Grafton and Alton had already had considerable experience in collecting water samples for the State Water Survey.

The map on page 8 shows the relative situations of the various points of collection.

METHODS OF PHYSICAL AND CHEMICAL EXAMINATION.

When the samples were received at the laboratory a serial number was immediately placed upon each bottle and upon the tag or certificate which accompanied it; then the rubber cloth which covered the stopper was removed, the stopper and neck of the bottle cleaned, and, after

withdrawing the stopper, some of the water was so poured out as to rinse off the lip of the bottle.

After noting the turbidity, but before beginning the analysis, the sample was thoroughly shaken and every effort was made to keep all solid matters in suspension while the portions were being taken for the various determinations. Nearly half of the sample was immediately filtered through heavy Swedish filters, which had been previously washed with nitrogen free water. Often it was necessary to filter more than once.

The nitrites were always determined immediately upon reception of the sample in the laboratory; the determinations of nitrates, the ammonias and oxygen consumed were begun at once also, and the others were started as soon as possible. Some of the determinations, as the total solids and chlorine, were ordinarily not finished until several days after that upon which the sample was received in the laboratory.

In the tables of results, the date of collection indicates the date placed upon the collector's tag at the time the sample was taken. The date of analysis refers to the time of the receipt of the sample in the laboratory, which also invariably represents the day when the analysis of the sample was begun.

Turbidity and Sediment.—The amount of sediment and the degree of turbidity were noted from mere visual inspection at the time the sample was received and again in a portion of the sample after standing over night, and are indicated in the tables of results by the very approximate terms, "slight," "distinct," "decided" and "much," to indicate the degree of turbidity, and the terms, "very little," "little," "considerable" and "much," to indicate the relative quantity of sediment. A more definite idea of the amount and nature of the suspended matters is, of course, to be had from the figures recorded in the respective columns under the headings: "Total Solids," "Loss on Ignition," "Oxygen Consumed," "Albuminoid Ammonia," etc.

Odor.—Note was made of the odor after thoroughly shaking the water in the bottle just before the portions of the sample were poured out for the determination of the various constituents, and the result of the observation was roughly expressed as "oily," "gassy," "musty," "none," etc.

The Color.—The color of the water was determined by comparison with the color developed in the ammonia standard solution used in nesslerization; in most cases it was necessary to filter the water for this purpose.

The figure recorded in each case represents the volume of standard ammonium chloride solution required to develop the same tint when diluted to fifty cubic centimeters with ammonia free water and treated with the usual amount of nessler reagent; that is, the color recorded as 1. represents the color developed by nesslerization of a solution containing one cubic centimeter of the standard ammonic chloride solution diluted to fifty cubic centimeters with ammonia free water; or, in other words, fifty cubic centimeters of a solution which contains ammonic chloride equivalent to one one-hundredth of a milligram of nitrogen.

The tubes employed were those used in the regular nesslerization. They are of colorless glass, ten inches in extreme length and eight inches high to the mark; bottoms are ground smooth and polished.

Total Solids.—For the determination of the total solids, to two hundred and fifty cubic centimeters of the water, five cubic centimeters of a four-tenths per cent sodium carbonate solution were added, and the liquid boiled to dryness in a platinum dish upon the water bath When dry, the dish and its contents were placed in the air bath, kept at 180 degrees Centigrade, and were heated until the weight was essentially constant, the time of heating ordinarily being one hour.

Loss on Ignition.—The loss on ignition was determined by heating the residue from evaporation in a radiator to low redness. No attempt was made to entirely burn away all carbonaceous matter contained in the residue, and the residues frequently were quite dark in appearancee from presence of minute particles of carbon.

Chlorine.—The chlorine determinations were made by the ordinary standard process by titration with silver nitrate solution. The indicator employed was potassium chromate of five per cent strength, one cubic centimeter of the solution being used with each lot of water titrated.

The end point was in all cases determined by close comparison with a blank. Fifty cubic centimeters of water were ordinarily taken for the determination, but in case there was reason to suppose that the water contained less than ten parts of chlorine per million, a larger quantity was used. In all such cases two hundred and fifty cubic centimeters or more were employed. To the measured water, five cubic centimeters of sodium carbonate solution (four grams Na_2CO_3 to the liter) were added and the liquid boiled down, the final volume being brought to fifty cubic centimeters before the determination was made.

Oxygen Consumed.—For the determination of the oxygen consumed, one hundred cubic centimeters of the water were used. To this, two cubic centimeters of pure concentrated sulphuric acid were added, and then ten cubic centimeters of the standard potassium permanganate solution, the strength used being such that one cubic centimeter was equivalent to one-tenth milligram of oxygen.

Every effort was made to have all determinations of oxygen consumed conducted with the greatest uniformity throughout. The heating was effected by immersing the flasks containing the mixture in the boiling water of a large bath. The time of heating was made exactly thirty minutes in each case, and the determination was carried out immediately upon removing the flasks with their contents from the bath.

Nitrogen as Free or Saline Ammonia.—Two hundred and fifty cubic centimeters of the water sample were diluted to 500 cubic centimeters with nitrogen free distilled water. Five cubic centimeters of a twenty per cent sodium carbonate solution were added and the liquid distilled from round-bottomed Jena glass flasks of capacity 900 cubic centimeters. The flasks were supported upon asbestos rings and heated by direct application of the flame. Connection with the condenser was

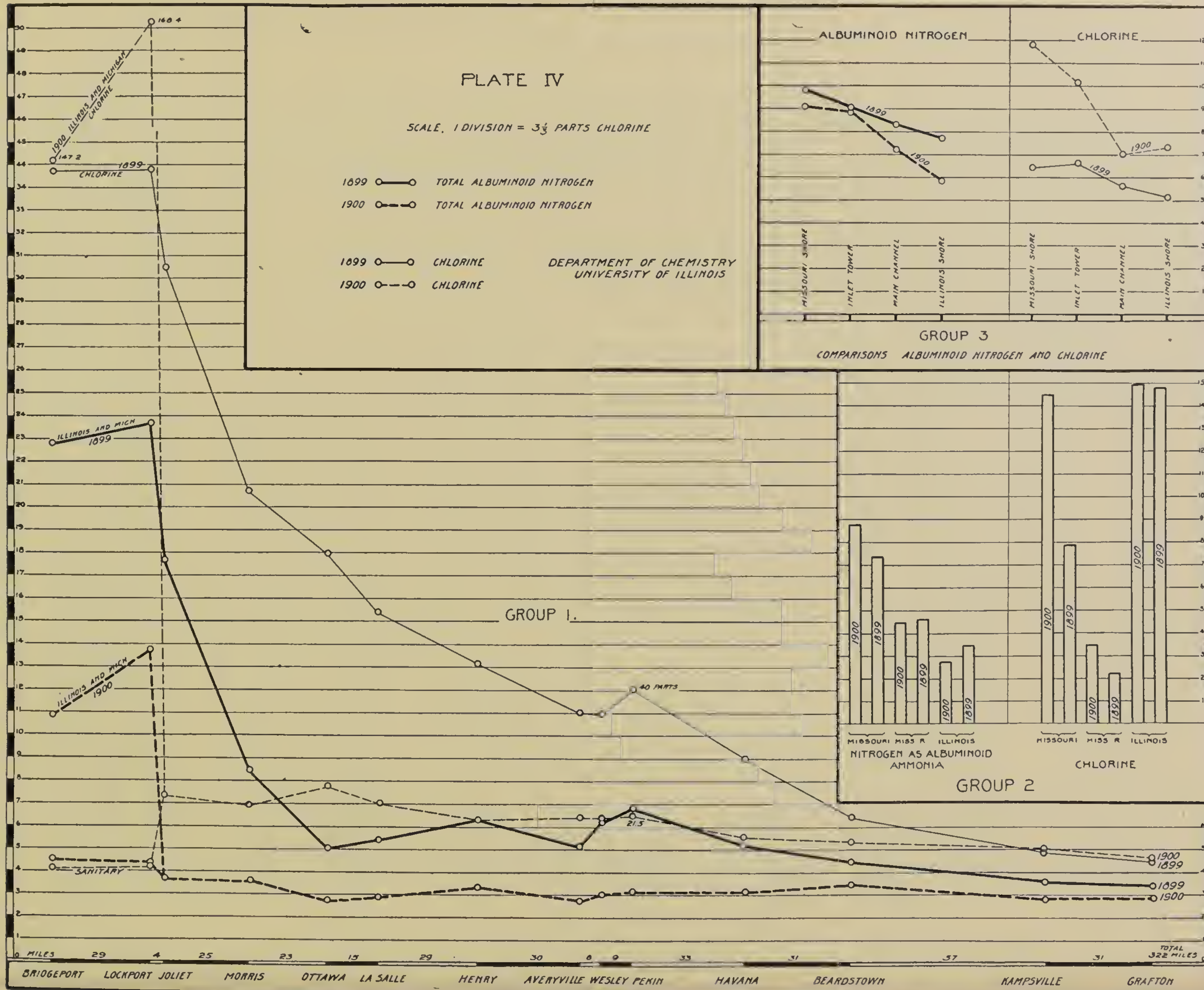


PLATE IV
SCALE. 1 DIVISION = 3⅓ PARTS CHLORINE
1899 TOTAL ALBUMINOID NITROGEN
1900 TOTAL ALBUMINOID NITROGEN
1899 CHLORINE
1900 CHLORINE
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
GROUP 1.
1900 ILLINOIS AND MICHIGAN CHLORINE
168.4
147.2
CHLORINE
1899
ILLINOIS AND MICH 1899
ILLINOIS AND MICH 1900
SANITARY
40 PARTS
21.5
MILES 29 4 25 23 15 29 30 6 9 33 31 37 31
TOTAL 322 MILES
BRIDGEPORT
LOCKPORT
JOLIET
MORRIS
OTTAWA
LA SALLE
HENRY
AVERYVILLE
WESLEY
PEKIN
HAVANA
BEARDSTOWN
KAMPSVILLE
GRAFTON
ALBUMINOID NITROGEN
CHLORINE
MISSOURI SHORE
INLET TOWER
MAIN CHANNEL
ILLINOIS SHORE
GROUP 3
COMPARISONS ALBUMINOID NITROGEN AND CHLORINE
MISSOURI
MISS R
ILLINOIS
NITROGEN AS ALBUMINOID AMMONIA
CHLORINE
GROUP 2

made by means of the modified form of Reitmair and Stütsen safety bulb designed by Hopkins.

We at first employed condensing tubes of block tin, three-eighths of an inch internal diameter, with a cooling surface twenty inches in length, but for most of the work we employed tubes of aluminium of the same dimensions. The tubes pass through a galvanized iron tank, through which a constant current of cold water is kept flowing. Before each determination the entire apparatus was thoroughly steamed until free of ammonia.

As all of the river waters contained considerable nitrogen as free ammonia, the distillate was collected in flasks of 200 cubic centimeters capacity, the distillation being continued until the flasks were full to the mark, and at such rate that from thirty to forty minutes lapsed between the appearance of the first drops of distillate and the completion of the distillation of the 200 cubic centimeters. The distillates thus caught were thoroughly mixed, the flasks stoppered and set aside for the nesslerization.

Nitrogen as Albuminoid Ammonia.—The determination of the albuminoid ammonia was made in the usual manner upon the residue remaining from the determination of free ammonia. The apparatus and contents having been somewhat cooled, fifty cubic centimeters of the usual alkaline permanganate solution were added through a funnel, the flask immediately connected again with the still, and distillation proceeded with at the same rate as in the determination of the free or saline ammonia. The distillate was caught in flasks of 200 cubic centimeters capacity, and the distillation was considered complete when two hundred cubic centimeters had come over.

Nesslerization.—In conducting the nesslerization, care was always taken that the distillates and the standards were of the same temperature. Commonly those distillates obtained in the afternoon were allowed to stand in a cool place until the next morning before proceeding with the determination.

The ammonium chloride solution used for the comparisons was of such strength that one cubic centimeter contained ammonium chloride corresponding to one one-hundredth of a milligram of nitrogen.

The eighteen standards used in the comparison were made of the lowing strengths. i. e., the quantities of standard ammonium chloride solution used were .05, .1, .2, .4, .6, .8, 1. cubic centimeter, 1.2, 1.4, 1.6, 1.8, 2., 2.5. 3., 3.5, 4., 4.5, 5. cubic centimeters.

In nesslerizing, one cubic centimeter of the nessler solution was added to the contents of each nessler tube and the mixture allowed to stand twenty minutes for the development of the full color. The reagent was always added to the samples and the standards simultaneously, and the readings were all taken within one hour of the time when the reagent was added.

The comparisons have been greatly facilitated by the use of a black wooden box or camera, which cuts out all side lights, the tubes being illuminated from the bottom by means of a mirror reflecting light from

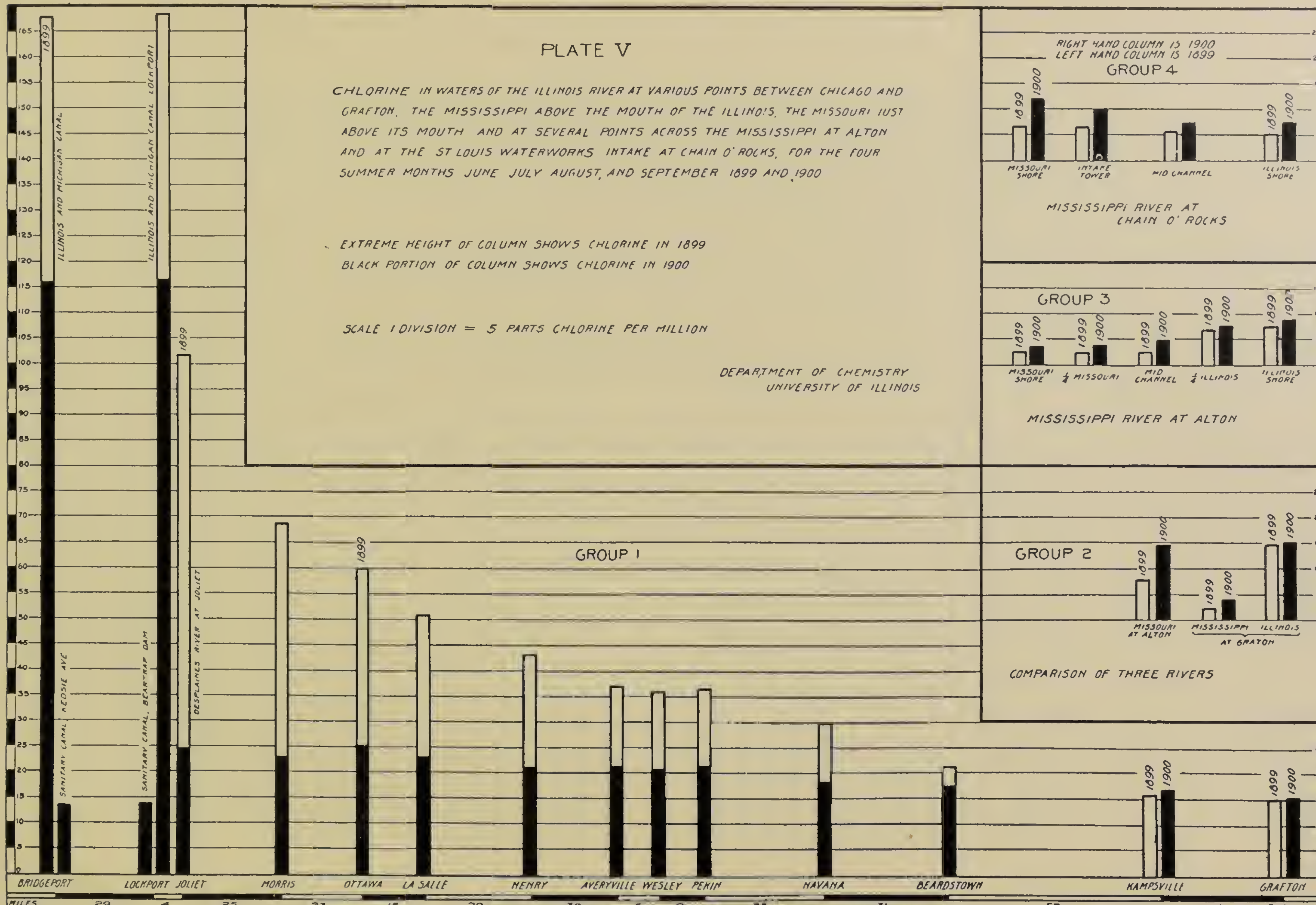


PLATE V
CHLORINE IN WATERS OF THE ILLINOIS RIVER AT VARIOUS POINTS BETWEEN CHICAGO AND GRAFTON, THE MISSISSIPPI ABOVE THE MOUTH OF THE ILLINOIS, THE MISSOURI JUST ABOVE ITS MOUTH AND AT SEVERAL POINTS ACROSS THE MISSISSIPPI AT ALTON AND AT THE ST LOUIS WATERWORKS INTAKE AT CHAIN O' ROCKS, FOR THE FOUR SUMMER MONTHS JUNE JULY AUGUST, AND SEPTEMBER 1899 AND 1900
EXTREME HEIGHT OF COLUMN SHOWS CHLORINE IN 1899
BLACK PORTION OF COLUMN SHOWS CHLORINE IN 1900
SCALE 1 DIVISION = 5 PARTS CHLORINE PER MILLION
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
GROUP 1
1899
ILLINOIS AND MICHIGAN CANAL
SANITARY CANAL KEDSIE AVE
ILLINOIS AND MICHIGAN CANAL LOCKPORT
SANITARY CANAL, BEARTRAP DAM
DESPLAINES RIVER AT JOLIET
BRIDGEPORT
LOCKPORT
JOLIET
MORRIS
OTTAWA
LA SALLE
HENRY
AVERYVILLE
WESLEY
PEKIN
HAVANA
BEARDSTOWN
KAMPSVILLE
GRAFTON
MILES
29
4
25
23
15
29
30
6
9
33
31
57
31 TOTAL 322 MILES
RIGHT HAND COLUMN IS 1900
LEFT HAND COLUMN IS 1899
GROUP 4
MISSOURI SHORE
INTAKE TOWER
MID CHANNEL
ILLINOIS SHORE
MISSISSIPPI RIVER AT CHAIN O' ROCKS
GROUP 3
MISSOURI SHORE
¼ MISSOURI
MID CHANNEL
¼ ILLINOIS
ILLINOIS SHORE
MISSISSIPPI RIVER AT ALTON
GROUP 2
MISSOURI AT ALTON
MISSISSIPPI
ILLINOIS
AT GRAFTON
COMPARISON OF THREE RIVERS

the northern sky, the cross-section of the tubes being brought to the eye by another mirror placed just above the tubes.

Total Organic Nitrogen.—The total organic nitrogen in the original water and in the filtered water was determined by the Kjeldahl process, as follows: Two hundred and fifty cubic centimeters of the water were diluted with 250 cubic centimeters of nitrogen free distilled water; then five cubic centimeters of twenty per cent sodium carbonate solution were added and the mixture distilled as usual for the removal of all free ammonia, the distillation being pushed to precisely the same point as that reached in the distilling over of free ammonia for the determination of free or saline ammonia and albuminoid ammonia. To the residue in the flask ten or twenty cubic centimeters of pure nitrogen free sulphuric acid were added and the solutions heated under the proper precautions until the water was all expelled and the organic matters completely destroyed.

After cooling, 250 cubic centimeters of ammonia free water were added and then an excess (usually about fifty cubic centimeters) of strong nitrogen free sodium hydroxide solution. The flask was immediately connected with the condenser, the contents mixed by thorough shaking and the distillation, which was conducted at first very slowly, was continued until 200 cubic centimeters were distilled over. After thorough mixing, an aliquot portion of this distillate was employed for nesslerization in the ordinary manner.

Nitrogen as Nitrites.—Fifty cubic centimeters of the water were placed in a nessler tube, one cubic centimeter of an acid solution of naphthylamine hydrochloride (eight grains of naphthylamine, eight cubic centimeters of strong hydrochloric acid and sufficient water to make one liter of solution) and one cubic centimeter of a saturated solution of sulphanilic acid in water containing five per cent of strong hydrochloric acid were added, and the mixture allowed to stand for one hour.

Simultaneously with the addition of the reagents to the water which was being examined, the same quantities of reagents were added to a series of solutions which contained accurately known quantities of pure sodium nitrite. If a color appeared in the water sample in course of twenty minutes to one hour after addition of the reagents, it was matched with some one of the tints produced in the series of standards, and the quantity of nitrite contained in the original water was regarded as being the same as that contained in the standard which produced the same tint. If no color developed in the course of an hour, the water was considered free of nitrites.

Many of the river waters examined contained so much nitrites that the color developed in the undiluted sample was too deep for accurate comparison. In such cases quantities of from one to ten cubic centimeters of the sample were diluted to fifty cubic centimeters with nitrogen free water before adding the reagents.

Standard solution of sodium nitrite was prepared from pure silver nitrite by reaction with sodium chloride, and for convenience in making up the standards was made in two strengths, one solution containing in

one cubic centimeter the equivalent of .005 milligram of nitrogen, the other .0005 milligram of nitrogen.

Waters which were turbid or deeply colored were clarified and decolorized by treatment with aluminium hydroxide and filtration before testing for nitrites. The comparison of tints was made in the camera described under Nesslerization.

Nitrogen as Nitrates.—One hundred cubic centimeters of the water were treated with two cubic centimeters of nitrogen free sodium hydroxide solution of thirty-three per cent strength, and the solution boiled down rapidly to about one-third its volume to remove free ammonia; the liquid was then diluted to one hundred cubic centimeters with nitrogen free distilled water, cooled and put into a large test tube.

One gram of aluminium in the form of a strip of thin foil was introduced and the tube with its contents placed in a water bath, the temperature of which was kept at about 25 degrees Centigrade, where it was allowed to remain over night. The reductions to ammonia were ordinarily complete when the examinations were continued next morning.

The contents of the reduction tube, including such portion of the aluminium foil as remained, were transferred to a distillation flask, 250 cubic centimeters of nitrogen free water being used to wash out the tube and dilute the liquid. The distillation and subsequent nesslerization were conducted precisely as for the determination of free or saline ammonia.

Dissolved Oxygen.—For the determination of dissolved oxygen, we have found the method of Albert Levy most satisfactory.* The process involves the use of a special pipette, with glass cock at each end. The capacity of the pipettes which we have used is exactly 107 c.c. The reagents employed consist of a solution of 150 grams of caustic potash in a liter of water, a solution of 22 grams of ammonio ferrous sulphate in a liter of water, a fifty per cent solution of sulphuric acid and a standard solution of potassium permanganate of such strength that one cubic centimeter is exactly equivalent to one-tenth of a milligram of oxygen.

The method of procedure is as follows: The pipettes are filled with the water either by immersing in the stream itself or by use of a rubber syringe. Then two cubic centimeters of the caustic alkali solution are put into the funnel at the top, and, by careful manipulation of the two cocks, are allowed to enter and mix with the water without admitting air. The funnel is then rinsed out and five cubic centimeters of the ammonio ferrous sulphate solution introduced into the funnel and then into the pipette by the same manipulation as before. The water run out of the pipette at the bottom as the reagents are admitted at the top is caught in the beaker in which the subsequent titration with permanganate is to be effected and which already contains two cubic centimeters of fifty per cent sulphuric acid.

It is assumed that the alkali and the iron solution in entering the pipette displace their own volume of the water, and with careful manipulation this undoubtedly is essentially effected, so that we may assume that

*This method is as described in the Annuaire de L'Observatoire de Mont-Souris, for 1883 and subsequent years.

within the pipette there remain 100 cubic centimeters of the original water with the seven cubic centimeters of the reagents.

The mixing of the liquids within the pipette is effected by shaking the pipette with an eccentric rotatory motion. In the course of a few minutes the action is completed, and from the color of the precipitate one may gather an idea as to the relative amount of oxygen contained in the solution; that is, if the water is about saturated, the precipitate is apt to show a somewhat brownish color, due to the ferric hydroxide, while if the quantity of oxygen is very small the precipitate is likely to be black, showing the preponderance of the ferrous hydroxide in the precipitate.

After a few minutes, when the action is thought to be complete, five cubic centimeters of sulphuric acid are introduced into the funnel, and, the cock between the funnel and the pipette being opened, the sulphuric acid, by reason of its greater gravity, passes from the funnel down into the interior, and mixing with the liquid dissolves the hydroxides of iron and renders the entire liquid acid.

When this reaction is complete, as shown by the clearing up of the solution, the contents of the pipette are run into the beaker, and the excess of ferrous salt determined by titration with the standard permanganate solution. A blank is run upon 107 cubic centimeters of the original water for every determination that is made, this being easily done while the reactions are taking place within the pipette.

In running the blank, 107 cubic centimeters of the water are measured into a beaker, then seven cubic centimeters of the sulphuric acid are added and the liquid mixed; after this the caustic potash, two cubic centimeters, is added, and finally precisely five cubic centimeters of the ferrous sulphate solution. Then the titration is effected as in the actual determination. The difference between the two readings—i. e., that of the blank and that of the direct determination—represents the quantity of dissolved oxygen in one hundred cubic centimeters of the water.

We have found the method of Levy more convenient than the Winkler method. Its advantages appear to us to be mainly due to the fact that the blank to accompany each determination is so easily made; whereas, with the Winkler method, the determination of the blank, which with the river waters concerned in these investigations is necessary for every sample examined, entails so much labor as to limit the applicability of the method.

As it has not been practicable for us to make all of the oxygen determinations upon the spot, we have had a great many samples of water shipped from the river to the laboratory. The determinations of the oxygen in these are, in most instances, made within twenty-four hours of the time of collection, but in that length of time the dissolved oxygen is found in most cases to diminish considerably in amount.

The waters of the Illinois River and its tributaries and those of the Mississippi contain a great deal of organic matter which is easily susceptible to the influence of dissolved oxygen. We have found, however, that it is perfectly practicable to treat the water samples with a

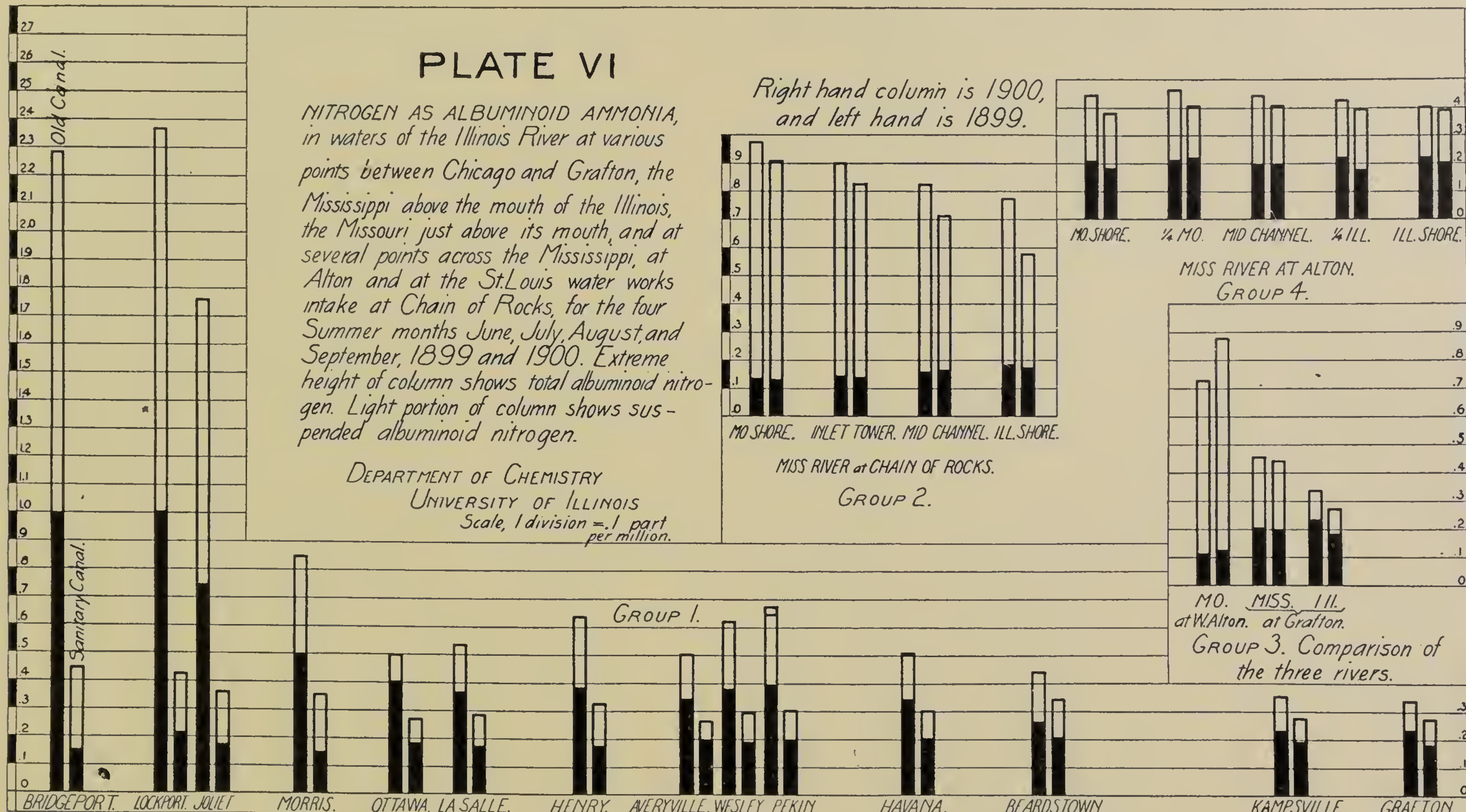


PLATE VI
NITROGEN AS ALBUMINOID AMMONIA, in waters of the Illinois River at various points between Chicago and Grafton, the Mississippi above the mouth of the Illinois, the Missouri just above its mouth, and at several points across the Mississippi, at Alton and at the St.Louis water works intake at Chain of Rocks, for the four Summer months June, July, August, and September, 1899 and 1900. Extreme height of column shows total albuminoid nitrogen. Light portion of column shows suspended albuminoid nitrogen.
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
Scale, 1 division =.1 part per million.
Right hand column is 1900, and left hand is 1899.
Old Canal.
Sanitary Canal.
BRIDGEPORT. LOCKPORT. JOLIET MORRIS. OTTAWA. LA SALLE. HENRY. AVERYVILLE. WESLEY PEKIN HAVANA. BEARDSTOWN KAMPSVILLE GRAFTON.
GROUP 1.
MO SHORE. INLET TOWER. MID CHANNEL. ILL. SHORE.
MISS RIVER at CHAIN OF ROCKS.
GROUP 2.
MO. MISS. ILL.
at W.Alton. at Grafton.
GROUP 3. Comparison of the three rivers.
MO. SHORE. ¼ MO. MID CHANNEL. ¼ ILL. ILL. SHORE.
MISS RIVER AT ALTON.
GROUP 4.

little mercuric chloride and thus prevent such reactions as result in the disappearance and consequent diminution of the dissolved oxygen; so that it has been practicable for us in the laboratory to make the comparison of the original quantity and also of the staying qualities of the dissolved oxygen in the water.

With a set of samples treated with a few drops of saturated solution of mercuric chloride we get a result which is essentially the same as that shown by the determination on the spot, while with the other set of samples which have been shipped in the original condition—i. e., merely in bottles which are entirely filled, but which have not been treated with mercuric chloride—it is found that the dissolved oxygen is considerably less in amount. The difference between the two is a rough indication of the condition of the water with respect to content of dissolved oxygen and content of such impurities as easily cause the disappearance of dissolved oxygen.

Our comparisons of the Winkler method with the Levy method show that the latter method gives somewhat higher result, but the differences are ordinarily very slight, and for comparative results the Levy method is so superior in economy of time and labor that of late we have used it almost exclusively.

CHEMICAL EXAMINATIONS.

Our sanitary chemical analyses have included fourteen different quantitative determinations upon each sample of water, the results of which appear in Tables Nos. 1 to 80, but for the present we need consider only those substances which are generally regarded as of the greatest significance in indicating the relative condition of the waters of streams—namely, chlorine, oxygen consumed, free ammonia, albuminoid ammonia, organic nitrogen and nitrites.

As is well known, and as also appears from the data of our examinations, the water of the canal at Bridgeport is exceedingly foul, being charged with all sorts of refuse matters and sewage. During the period May 1, 1899, to December 31, 1899 (for details see Tables 1-38 and the averages of Table A, page ...), there was comparatively little change in the character of the canal water as it flowed from Bridgeport to Lockport, i. e., the organic matters were present in practically the same quantity at Lockport as they were at Bridgeport.

The effect of the dilution of the canal water by mixing with the waters of the Desplaines River at Joliet was to diminish the proportions of the various constituents and render it possible for the putrefactive decomposition to proceed more actively.

At Morris, the first point upon the Illinois River proper, we found considerably smaller proportions of five of the significant substances above referred to, due largely to the dilution of the water of the Desplaines River by mixing with the waters of the Kankakee, nine miles above Morris; but the slight increase in nitrites shows that the second stage in oxidation is beginning. Continuing down the course of the

stream, the five appear in diminished quantity at Ottawa, while the nitrites have enormously increased, which fact shows that at this point the purifying oxidation caused by the action of bacteria is in full course and at the maximum.

Below Ottawa, the oxygen consumed and the albuminoid ammonia and tota. organic nitrogen increase as we approach La Salle, while the free ammonia and the nitrites are diminishing, partly through dilution with the waters of the Fox River, which enters at Ottawa, partly by continuance of the natural oxidation processes. The increase in the albuminoid ammonia and organic nitrogen continues as we proceed down the river to Henry, partly from fresh accessions of sewage, but also by reason of the growth of grosser vegetable organisms than bacteria, the plankton, which now begins to increase enormously, but all the constituents now under consideration diminish on the way to Averyville.

At Averyville each of the various constituents, except the nitrites, which, however, are not present in considerable proportions until the second stage of oxidation begins vigorously below Morris, has now reached the smallest proportion thus far found. The station at Averyville is about three miles above the Peoria city hall.

The effect of Peoria's contribution of sewage and refuse is seen in the increase of each one of the significant substances between Averyville, just above, and Wesley City, just below. From this vicinity there is a continuous diminution in the quantity of the various constituents until we reach the mouth of the river at Grafton, although large quantities of refuse matters enter the river at Pekin and cause an increase in quantity of oxygen consumed and free ammonia, etc., at that point.

The study of the numerous data of our analyses shows that there is a very considerable purification of the waters of the Illinois River as they flow slowly to the vicinity of Peoria, and that again below Peoria the purification proceeds to such an extent that the water discharged from the Illinois River into the Mississippi at Grafton contains less organic matters than does the water of the Mississippi River itself, and less than is contained in the water of the Missouri near its mouth.

The facts referred to are exhibited by means of the curves of Plate No. 1, page 45, which presents most of the more significant of the averages of Table A, pages i-x. In considering the evidence thus presented, the peculiar significance of the several constituents must be kept in mind.

Chlorine.—This substance is contained in the waters in combination with various basic elements, but chiefly in the form of sodium chloride or common salt. Chlorides occur in very small quantity in ordinary soils, and hence are present in small proportions in the waters of streams in their natural condition. Most animal matters contain more or less chlorides, and chlorides are constant and considerable constituents of sewage.

The only natural causes of change in the proportion of chlorine, aside from such slight concentration as may result from long continued hot weather during the season of minimum flow, would be its decrease by dilution with waters which contain less, or increase by mixing with

waters and other liquids, as sewage, etc., which contain more. The diminution between Lockport and Joliet was due to dilution with the waters of the Desplaines River, which water during this period contained but about one-fifteenth as much chlorine as did the canal water.

The water of the Kankakee, uniting with the Desplaines above Morris, contained 3.9 parts of chlorine per million, and it was the addition of this water, as well as the water of smaller rivers and creeks, which brought about a very notable decrease in the proportion of chlorine between Joliet and Morris. The diminution in chlorine continued until Peoria (Averyville) was reached, resulting from the dilution of the river water with the water of smaller streams, and also undoubtedly by the underground flow to the river from the country lying on either side. This underground flow is known to be considerable along the middle stretch of the Illinois River between La Salle and Beardstown, and particularly between Peoria and Havana, and in times of low water may have quite an appreciable effect in diluting the waters of the stream, an effect which, of course, was more notable before the flow and the initial dilution were increased by the inflow of lake water secured by the opening of the Drainage Channel in January, 1900.

The increase in chlorine between Averyville and Wesley City resulted from the contribution of Peoria's sewage to the river, and in small part was probably due to the inflow of the water of certain saline artesian wells and springs. From this point to the mouth of the river there was a gradual but considerable diminution of the chlorine.

Oxygen Consumed is the quantity of oxygen required for the burning of the organic matters contained in the water, or rather the quantity of oxygen required for oxidation of the readily affected organic matters contained in the water; for, as is well known, not all of the organic matters are affected, i. e., completely oxidized by the chemical process employed. It is evident from the curves that the organic matters which at Lockport required a great deal of oxygen were so affected by dilution and natural oxidation as to appear in much smaller proportions at Morris and Ottawa. A notable increase occurs between Ottawa and La Salle, but the organic matters then diminish until we reach Averyville. There is again an increase until we pass Pekin, and from there to the mouth of the river there is a gradual but definite diminution.

Free Ammonia or Saline Ammonia, as it is sometimes designated, is contained in comparatively great quantity in fresh sewage or sewage which is in the first stages of putrefaction. The rapid decrease in quantity of free ammonia between Joliet and Morris results mainly from dilution with the waters of the Kankakee, but between Morris and Ottawa and from there on down to the mouth, it is chiefly due to the natural oxidation, but doubtless is partly due to assimilation by the plant life which is abundant from Ottawa down.

The Nitrites contained in surface waters are products of the action of bacteria upon nitrogenous organic matters and constitute the second step in the series of decompositions which convert these organic matters finally into the comparatively unobjectionable mineral matters, which are

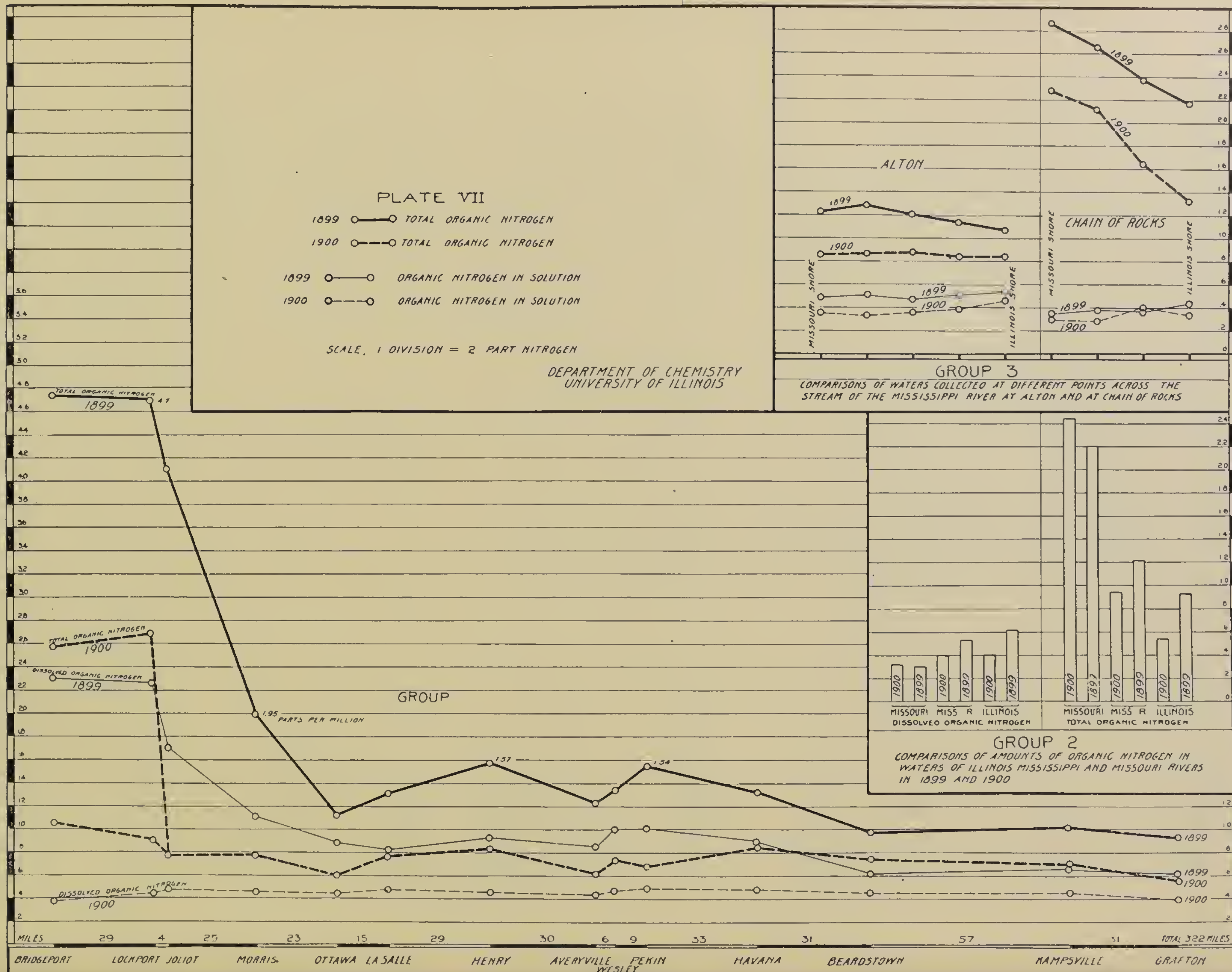


PLATE VII
1899 TOTAL ORGANIC NITROGEN
1900 TOTAL ORGANIC NITROGEN
1899 ORGANIC NITROGEN IN SOLUTION
1900 ORGANIC NITROGEN IN SOLUTION
SCALE, 1 DIVISION = 2 PART NITROGEN
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
ALTON
CHAIN OF ROCKS
MISSOURI SHORE
ILLINOIS SHORE
GROUP 3
COMPARISONS OF WATERS COLLECTED AT DIFFERENT POINTS ACROSS THE STREAM OF THE MISSISSIPPI RIVER AT ALTON AND AT CHAIN OF ROCKS
MISSOURI MISS R ILLINOIS
DISSOLVED ORGANIC NITROGEN
TOTAL ORGANIC NITROGEN
GROUP 2
COMPARISONS OF AMOUNTS OF ORGANIC NITROGEN IN WATERS OF ILLINOIS MISSISSIPPI AND MISSOURI RIVERS IN 1899 AND 1900
GROUP
TOTAL ORGANIC NITROGEN 1899
TOTAL ORGANIC NITROGEN 1900
DISSOLVED ORGANIC NITROGEN 1899
DISSOLVED ORGANIC NITROGEN 1900
1.95 PARTS PER MILLION
1.57
1.54
MILES 29 4 25 23 15 29 30 6 9 33 31 57 31 TOTAL 322 MILES
BRIDGEPORT LOCKPORT JOLIET MORRIS OTTAWA LA SALLE HENRY AVERYVILLE WESLEY PEKIN HAVANA BEARDSTOWN KAMPSVILLE GRAFTON

chiefly carbonic acid and nitrates. The comparatively small proportion of nitrites in the upper river to the neighborhood of Morris shows that this second stage of bacterial purification is to this point but beginning, but the great increase below Morris witnesses to the fact that from here on this highly important feature of nature's purification processes is efficiently active. The gradual diminution of nitrites to Averyville indicates a gradual progressive exhaustion of the food supply of the bacteria which are responsible for this oxidation, and thus serves as evidence that the purification is proceeding. The continuous decrease in nitrites from Pekin to Grafton clearly indicates the great improvement in the sanitary condition of the water during its passage from Pekin to the point of discharge into the Mississippi River.

The Total Organic Nitrogen is one of the most important data, inasmuch as the nitrogenous organic matters are the most significant and constant constituents of sewage, and include all sorts of animal refuse, tissues, etc., as well as constituting essential parts of all living things, great or microscopic, both vegetable and animal. It is substances of this class in particular which serve as the nutrients upon which bacteria thrive and multiply.

The Albuminoid Ammonia varies in conformity with the total organic nitrogen, though the quantity is but half that of the latter. Its significance is similar to that of the total organic nitrogen, but the total organic nitrogen represents all of the nitrogen that is contained in the organic matters; that is, as constituting part of the tissues living or dead, as well as various products of the vital activities of living organisms, while the albuminoid ammonia represents only the nitrogen of such part (about one-half) of these substances as is comparatively easily affected by the chemicals and process used in the albuminoid ammonia determination.

COMPARISON OF THE ILLINOIS WITH ITS TRIBUTARIES AND WITH THE MISSISSIPPI AND MISSOURI.

In Groups 2 and 3 of Plate No. 1, page 45, the various columns show the comparative proportions of total organic nitrogen, albuminoid ammonia and free ammonia contained in, and oxygen consumed by, the waters of the more important tributaries of the Illinois River, those of the Mississippi River above the mouth of the Illinois and those of the Missouri just above its mouth. It appears that during this period the waters of the Illinois at its mouth at Grafton contained more free ammonia than those of the Mississippi and the Missouri, and considerably more than those of its tributaries except the Big Vermilion (the Illinois and Michigan Canal is not here considered). On the other hand, the columns show that the waters of the Mississippi and the Missouri contained considerably more total organic nitrogen and albuminoid matters than did the waters of the Illinois, while the oxygen consumed was nearly twice as great. In these respects, too, the columns show that the Illinois compares favorably with its tributaries.

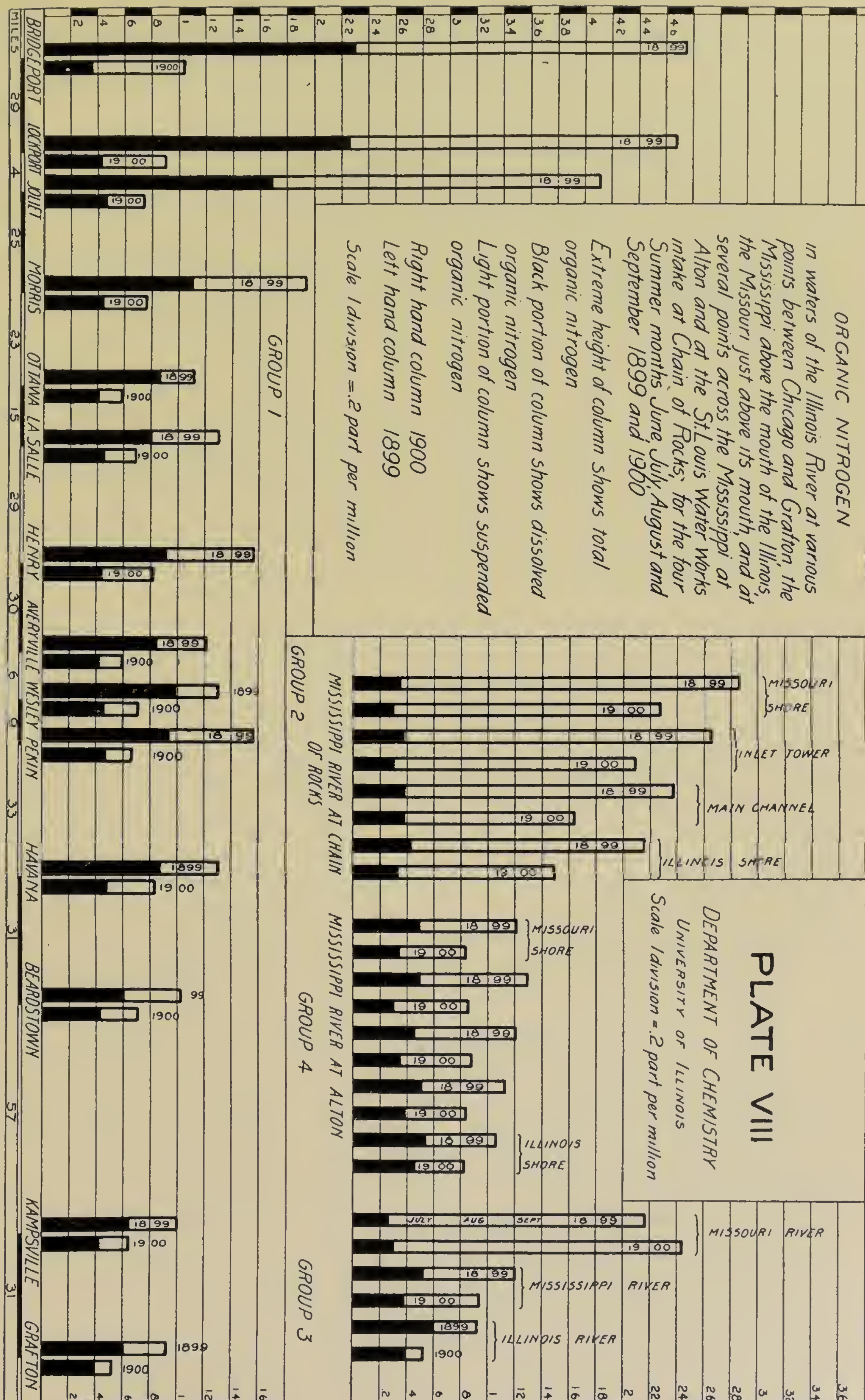


PLATE VIII
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
Scale 1 division = .2 part per million
ORGANIC NITROGEN
in waters of the Illinois River at various points between Chicago and Grafton, the Mississippi above the mouth of the Illinois, the Missouri just above its mouth, and at several points across the Mississippi at Alton and at the St. Louis Water Works intake at Chain of Rocks; for the four Summer months, June, July, August and September 1899 and 1900
Extreme height of column shows total organic nitrogen
Black portion of column shows dissolved organic nitrogen
Light portion of column shows suspended organic nitrogen
Right hand column 1900
Left hand column 1899
Scale 1 division = .2 part per million
GROUP 1
GROUP 2
MISSISSIPPI RIVER AT CHAIN OF ROCKS
GROUP 4
MISSISSIPPI RIVER AT ALTON
GROUP 3
MISSOURI SHORE
INLET TOWER
MAIN CHANNEL
ILLINOIS SHORE
MISSOURI RIVER
MISSISSIPPI RIVER
ILLINOIS RIVER
JULY
AUG
SEPT
MILES
BRIDGEPORT
LOCKPORT
JOLIET
MORRIS
OTTAWA
LA SALLE
HENRY
AVERYVILLE
WESLEY
PEKIN
HAVANA
BEARDSTOWN
KAMPSVILLE
GRAFTON
29
4
25
23
15
29
30
6
33
31
57
31
1899
1900

The Mississippi at Alton.—The curves of Group 4, Plate No. 1, referring to the cross-section of the Mississippi at Alton, represent the averages of analyses of samples of water taken at five points across the Mississippi at Alton, about 17 miles below the mouth of the Illinois.

It is evident from the consideration of the data (Tables 23-27 and A), and is graphically shown by the curves of Plate 1, that the waters of the Illinois do not mix thoroughly with the waters of the Mississippi, but chiefly pass down close to the Illinois shore, and that the quantities of organic matters contained in the Mississippi River waters are greater than the quantities of the same substances contained in the Illinois River waters, the chlorine and ammonia, on the other hand, being higher in the Illinois River than in the Mississippi at Alton or at Grafton.

The Mississippi at "Chain of Rocks."—The waters of the Missouri do not average so high in chlorine as do the waters of the Illinois, but they contain an enormous amount of suspended matters, and notably greater quantities of various objectionable organic matters. From the data of Tables 28-31 and Table A, exhibited in Group 5, Plate No. 1, it would seem that at the "Chain of Rocks" the waters passing down the west bank and beside the intake tower consist mainly of Missouri River water, and contain much larger quantities of organic matters than do the waters of the Illinois.

Further Comparisons.—The consideration of the analyses of the individual samples shows that the proportions of the nitrogenous organic matters never, during the given period, were so great in the Illinois River as they were in the Missouri, and that the minimum quantity of these matters in the Mississippi and in the Missouri never reached quite the low point that was observed in the water of the Illinois River. The general conclusion from the consideration of these data which, however, it must be remembered, cover simply the period from the beginning of May, 1899, to December 31, 1899, is that the water discharged from the Illinois River is in these respects in purer condition than the water of the Mississippi River or the water of the Missouri River, and that it is in most respects quite similar to the waters of the larger tributaries of the Illinois. The table below gives the specific data:

EFFECT OF OPENING THE DRAINAGE CHANNEL.

The effect of the dilution of the sewage of Chicago with lake water before discharging it into the Desplaines and the Illinois is shown by the analyses made during the year 1900. The data of these analyses appear in tables 39 to 80 inclusively, and the averages are brought together in Table B, pages i-x. The two plates upon pages 49 and 53, Nos. II and III respectively, present the most important averages graphically, and in the light of the explanatory discussion above, page ..., with reference to the earlier year, may readily be understood. They are not especially discussed here, for the reason that the analyses made during 1900 covered the period January 1 to October 1, while those of 1899 covered a different period, namely, that from May 1 to December 31.

It is a well-known fact that the waters of streams vary greatly at different seasons, both as to the volume of water and the content and nature of substances carried by the water. These seasonal variations are particularly important in the cases of some of the streams of the Mississippi Valley, and especially so for the Illinois, the Missouri and the Mississippi. However, inasmuch as the two periods overlap in the summer, it is possible for us to institute a comparison for the most important season of the year—the four months, June, July, August and September—during which period the most important physical features to be borne in mind are the comparatively small volume of water or flow and the comparatively high temperature, not only of the atmosphere, but of the water itself, features which are especially important with reference to the Illinois.

For the purpose of making this comparison I have prepared averages of the data of the analyses made during June, July, August and September, 1899, or before the opening of the Sanitary Channel, and similar averages of the data obtained from the analyses made during the same four months in 1900, or after the opening of the Sanitary Channel. The data appear in detail in the Tables 1-80, and the particular averages in question appear in Tables C and D respectively, upon pages i-x. In order to facilitate the comparison, the plates, Nos. 4 to 15, in which the various curves and columns represent the figures of the tables in a form which facilitates a realization of their significance, have been prepared.

In order to clearly understand the situation and the full significance of the data, reference should be frequently made to the statement of the reasons for selecting the various points of collection (pages 47 to 54) and to the map upon page 8, which shows the relative situations of these points.

In each plate there are two sets of curves or columns, one set representing the data for the summer of 1899, and the other representing the data for the summer of 1900. By following the various proportions of the curves it is made evident that the conditions in the river have changed considerably since the opening of the Drainage Channel.

The portions of the curves and the sets of columns at the left hand of each plate, representing the conditions prevailing between Chicago and Lockport, are, of course, modified more greatly than the other parts of the curves, for the reason that until January, 1900, it was the old, or Illinois and Michigan Canal only which carried the discharge of Chicago sewage into the Illinois River Valley, while since the opening of the Drainage Channel the Sanitary Canal itself carries, not merely undiluted sewage and stockyards drainage, but a very large proportion of diluting lake water.

Inasmuch as the Illinois and Michigan Canal is still mainly fed from a fork of the South Branch, which is not yet well flushed with lake water, we find that the proportions of the various constituents are still excessive in the waters of the old, or Illinois and Michigan, Canal, both at Bridgeport and at Lockport. It is to be remembered that the dis-

charge through the Illinois and Michigan Canal is now much less than it was formerly, for since the opening of the Drainage Channel the old canal is used chiefly for transportation, not particularly as a sewer, and the pumps at Bridgeport are supposed to raise only so much fluid as is required to maintain a serviceable depth for commerce. The average flow in the Illinois and Michigan Canal prior to 1900 was from 45,000 to 50,000 cubic feet per minute. In 1900 it was 26,700 and in 1901, 13,800 cubic feet per minute.

The figures of Tables Nos. 40 and 41 reveal occasional variations of considerable magnitude. These variations are chiefly due to the fact that the pumps at Bridgeport, which feed the Illinois and Michigan Canal, are situated but a few rods from the mouth of the South Fork, and that the diluted sewage, which, on its way through the South Branch to the Drainage Channel, passes the mouth of the South Fork, sometimes enters a short distance within the mouth and is thence pumped into the old canal The short duration of such occasional conditions is accountable for the fact that the variations are less frequent and less considerable at Lockport, 29 miles below.

At Joliet, where the discharges through the two canals and that from the Upper Desplaines River have come together, there is frequent and considerable variation in the proportions of organic matters and other impurities contained in the waters of the Desplaines River, partly, perhaps, in consequence of variations in the flow of water from the Illinois and Michigan Canal through use of the locks above, partly from occasional closing of the gates at the beartrap dam, thus shutting off or reducing the flow of the much more dilute sewage from the Drainage Channel.

The accumulation of sewage in the Chicago River which follows a stoppage or reduction of the flow through the Drainage Channel is another cause of variation, for when the gates are again opened the sewage discharged is for a time necessarily less diluted than it would otherwise have been. The variations at Joliet result in large part also from incomplete commingling of the waters, for the discharge from the old canal, entering by the east bank, generally passes down beside that bank for some considerable distance, but at times, when the flow from the Drainage Channel is reduced, extends further out into the stream, or possibly entirely across the river bed.

Comparison for Chlorine.—Upon Plate 4, page 57, there are shown, first, general curves representing the proportions of chlorine and of nitrogen as albuminoid ammonia in the waters of the stream at different points between Chicago and the mouth of the river at Grafton.

Comparison of the two curves representing chlorine shows a much more considerable diminution in the proportions of chlorine contained in the water flowing through the bed of the Desplaines River at Joliet in 1900 than in 1899. This is obviously due to the dilution of Chicago sewage with lake water, which passes through the Drainage Channel. The continuous diminution in content of chlorine between Bridgeport (in both years, following the Illinois and Michigan Canal as far as

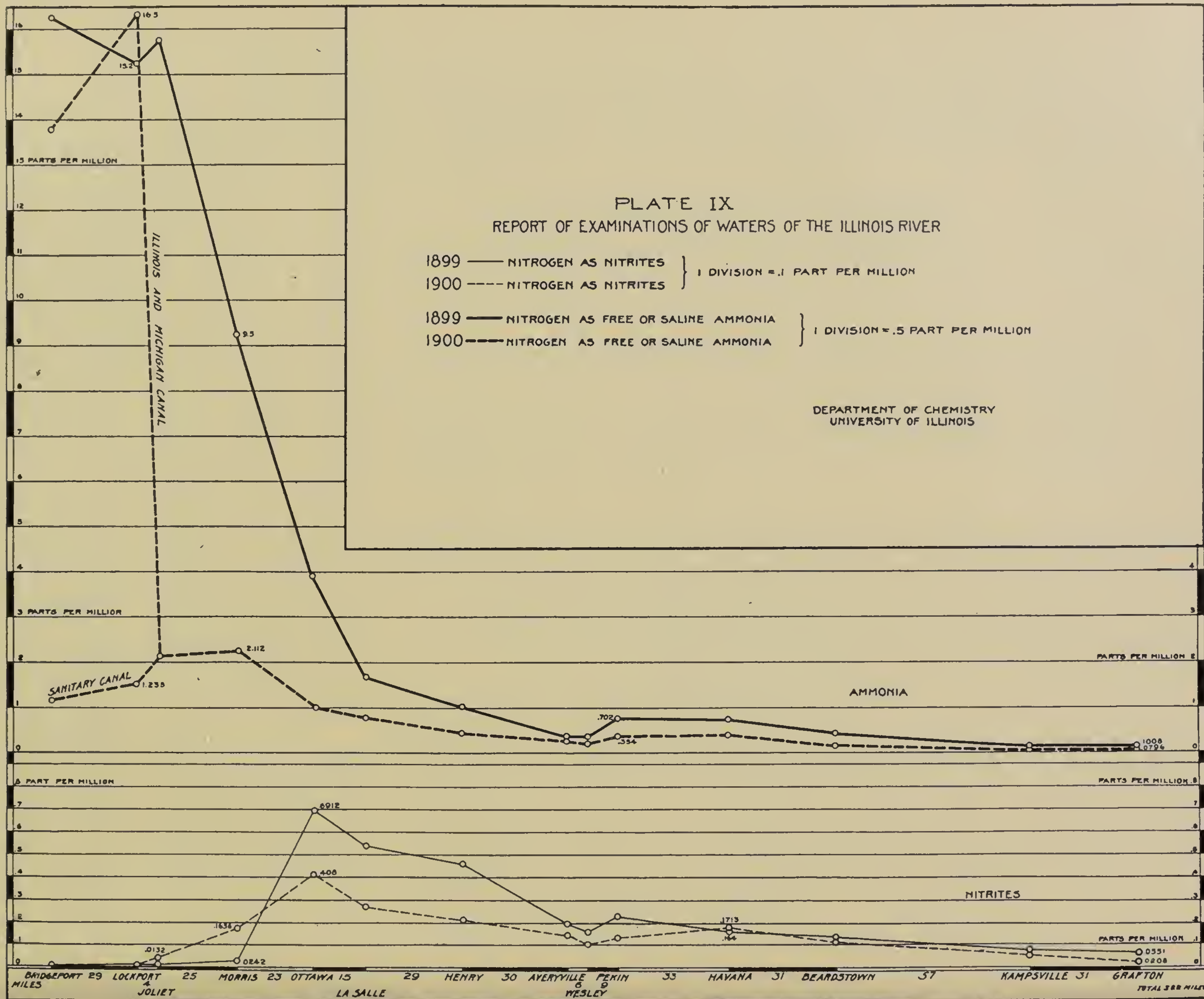


PLATE IX
REPORT OF EXAMINATIONS OF WATERS OF THE ILLINOIS RIVER
1899 —— NITROGEN AS NITRITES
1900 - - - - NITROGEN AS NITRITES
1 DIVISION = .1 PART PER MILLION
1899 —— NITROGEN AS FREE OR SALINE AMMONIA
1900 - - - NITROGEN AS FREE OR SALINE AMMONIA
1 DIVISION = .5 PART PER MILLION
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
ILLINOIS AND MICHIGAN CANAL
SANITARY CANAL
AMMONIA
NITRITES
15 PARTS PER MILLION
3 PARTS PER MILLION
.8 PART PER MILLION
PARTS PER MILLION
16.5
15.2
9.5
2.112
1.235
.702
.354
.1008
.0796
.6912
.406
.1636
.0132
.0242
.1713
.144
.0551
.0208
BRIDGEPORT 29 LOCKPORT 4 JOLIET 25 MORRIS 23 OTTAWA 15 LA SALLE 29 HENRY 30 AVERYVILLE 6 WESLEY 9 PEKIN 33 HAVANA 31 BEARDSTOWN 57 KAMPSVILLE 31 GRAFTON
MILES
TOTAL 288 MILES

Joliet) and the mouth of the river at Grafton is, of course, due merely to dilution. (See discussion of Chlorine, page 72.)

The average quantity of chlorine contained in the natural surface waters of the regions in question has ranged from two to three parts, as in the water of Lake Michigan, to as much as five or six parts, which is frequently found in the waters of such streams as the Fox, the Kankakee and the Sangamon.

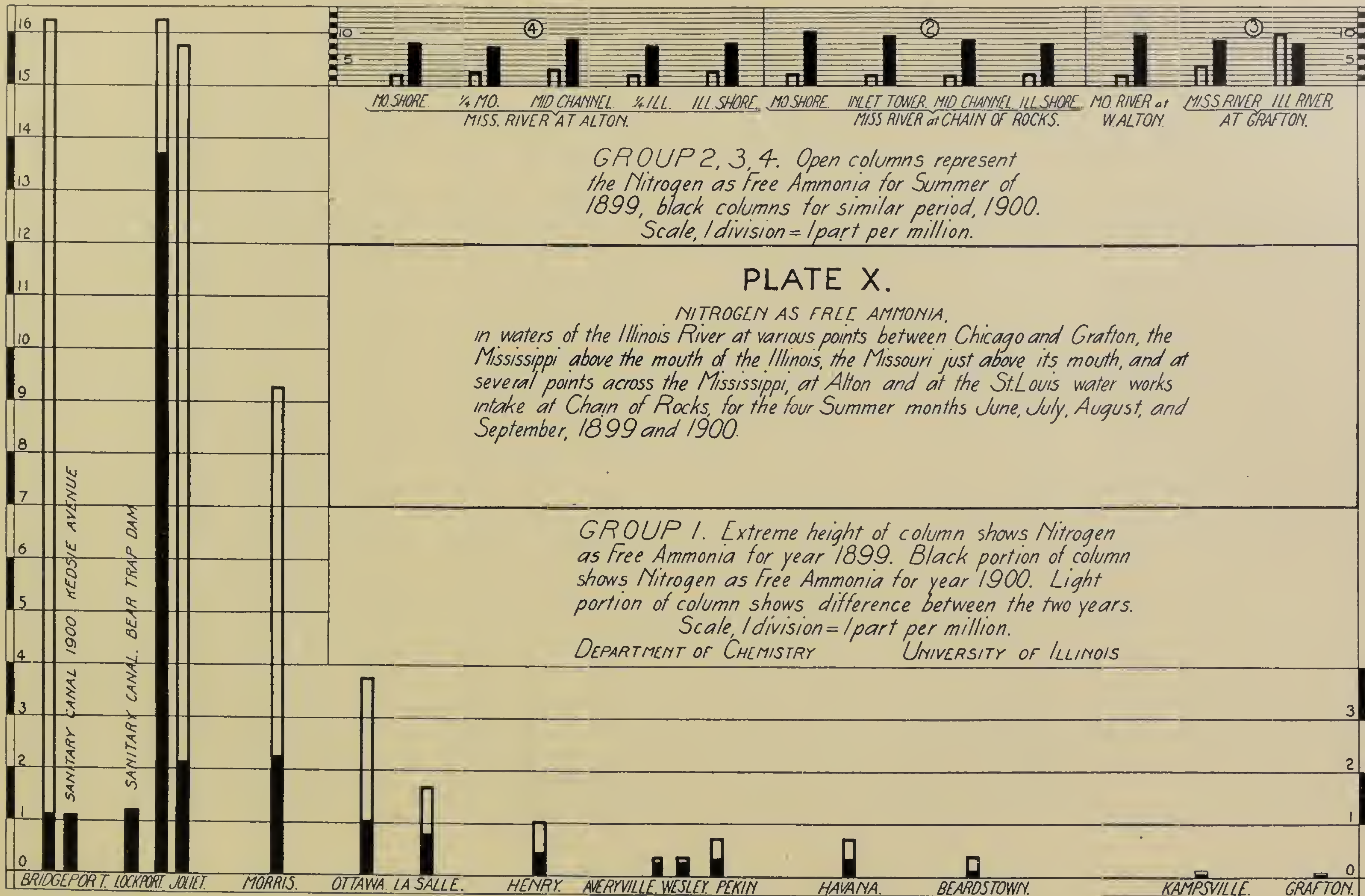
The waters which pass through the Drainage Channel contain a considerably smaller proportion of chlorine than is contained in the waters passing through the Desplaines and the Illinois River valleys, for the reason already noted, that the sewage carried by the Illinois and Michigan Canal and discharged by it into the Desplaines River just above Joliet is still very concentrated. Moreover, in and about Lockport and Joliet there are various saline artesian wells, sewers and manufacturing establishments which discharge into the old canal or the river between the collecting point at Lockport and that at Joliet.

From Joliet down the river, the slight fall in the chlorine for 1900, as we reach Morris, and the subsequent apparent increase in the content of chlorine at Ottawa, notwithstanding the inflow of the waters of the Kankakee above Morris, are, in some measure, misleading and untrustworthy, for the mixing of the waters of the two streams is, at these points, still incomplete, as subsequent work has shown.

To the incomplete mixing of the main body of water from the Drainage Channel with the waters of the various tributaries is due many of the variations in both directions which appear in the results for 1900 for the several points between and including Joliet and Ottawa. Various cross-sections made at La Salle, Averyville and Grafton, however, show that at these points the mixing is complete, for, particularly at Averyville and Grafton, which may be looked upon as critical points, determinations of chlorine in samples taken at a number of points across the stream have invariably shown that in these localities there is no difference in the chlorine content of the water anywhere between the two banks.

At the mouth, where the Illinois discharges into the Mississippi River, its water contains less chlorine than is found in it anywhere between that point and Chicago, except in the Sanitary Canal. The proportion contained in the water at the mouth of the river in 1900 is very slightly greater than that contained during the corresponding time in 1899.

Albuminoid Ammonia.—The curves representing the nitrogen as albuminoid ammonia show for 1899 a very rapid diminution in quantity as we pass from Bridgeport down the stream to Ottawa. Beyond Ottawa there is a notable increase, reaching the maximum at Henry, but beyond that point there occurs a considerable diminution to Averyville (Peoria). Below Averyville—i. e., at Wesley City and Pekin—the quantities of nitrogen as albuminoid ammonia were greatly increased as a result of the discharge of sewage and of wastes from distilleries, cattle-sheds, glucose works and such plants at Peoria and Pekin. Below Pekin there is again



GROUP 2, 3, 4. Open columns represent the Nitrogen as Free Ammonia for Summer of 1899, black columns for similar period, 1900.
Scale, 1 division = 1 part per million.

PLATE X.

NITROGEN AS FREE AMMONIA,
in waters of the Illinois River at various points between Chicago and Grafton, the Mississippi above the mouth of the Illinois, the Missouri just above its mouth, and at several points across the Mississippi, at Alton and at the St. Louis water works intake at Chain of Rocks, for the four Summer months June, July, August, and September, 1899 and 1900.

GROUP 1. Extreme height of column shows Nitrogen as Free Ammonia for year 1899. Black portion of column shows Nitrogen as Free Ammonia for year 1900. Light portion of column shows difference between the two years.
Scale, 1 division = 1 part per million.

DEPARTMENT OF CHEMISTRY UNIVERSITY OF ILLINOIS

a slight but constant diminution until we reach the mouth of the river at Grafton.

The curve for 1900 shows that there are much smaller quantities of albuminoid matters contained in the waters of the Sanitary Canal and in the waters of the Desplaines River at Joliet, and as we proceed down the stream from Joliet there is a decrease which reaches the limit at Ottawa. Beyond Ottawa the albuminoid nitrogen increases until Henry is reached, beyond which point it diminishes to Averyville. A slight increase occurs as we pass from Averyville to Wesley and Pekin and on to Havana.

Beyond Havana there is a gradual but continuous diminution until we reach the mouth of the river at Grafton, and the proporton of albuminoid nitrogen contained in the water discharged from the Illinois River at Grafton is less in 1900 than it was in the year 1899.

COMPARISON OF THE ILLINOIS WITH THE MISSISSIPPI AND THE MISSOURI.

Group 2, on Plate 4, represents, first, the comparison of the chlorine contained in the waters of the Illinois as it discharges into the Mississippi at Grafton for the summer months of 1899 and for the summer months of 1900. As is evident from inspection of the figures and the plate, the difference between the two years is so slight as to be hardly noticeable.

Second—A comparison of the chlorine contained in the Mississippi above the mouth of the Illinois River, for like periods in 1899 and 1900. This shows that the water of the Mississippi River contained a considerably greater proportion of chlorine during the summer of 1900 than it did during the summer of 1899, due, doubtless, to the fact that the water in the Upper Mississippi was at a lower stage during the summer of 1900. See Plate XVII for comparison of the stages of water in the Mississippi River in 1899 and 1900.

Third—A comparison of the chlorine contained in the waters of the Missouri River near the mouth for the same periods. This shows that the waters of the Missouri River contained a much higher proportion of chlorine during the summer of 1900 than during the corresponding season of 1899, but it must be noted that the period covered in 1899 is shorter than that for 1900, as in the earlier year the collections from the Missouri began July 10.

Fourth—Comparison of the content of albuminoid nitrogen in the Illinois River water for 1899 and 1900, referred to in the general statement above, is shown graphically in this group.

Fifth—Comparison of the content of nitrogen as albuminoid ammonia in the water of the Mississippi above the mouth of the Illinois shows a slightly smaller proportion contained in the water of the Mississippi in 1900 than was contained during the same period of 1899, and shows, further, that there was considerably more albuminoid nitrogen in the waters of the Mississippi River during each of these seasons, viz., 1899 and 1900,

than was contained in the waters of the Illinois River in either of the seasons in question.

Sixth—Comparison of the content of nitrogen as albuminoid ammonia in the waters of the Missouri shows that during the summer of 1900 the proportion was greater than during the summer of 1899, and shows, further, that more than twice as much was contained in the water of the Missouri River in each of these years than was contained in the waters of the Illinois River at Grafton.

CROSS-SECTION OF THE MISSISSIPPI AT ALTON AND AT MITCHELL OR "CHAIN OF ROCKS."

Group 3, upon Plate 4, represents the content of chlorine and of nitrogen as albuminoid ammonia in the waters of the Mississippi River at four points across the stream at Mitchell, Ill. ("Chain of Rocks"), opposite the intake tower of the St. Louis waterworks. From consideration of the curves it is made evident that the content of chlorine and of albuminoid nitrogen was considerably greater upon the Missouri side of the river than it was upon the Illinois side, and shows, further, that there was a greater difference between the two sides of the stream at the St. Louis pumping station during the season of 1900 than there was during the same period of the preceding year, or the year 1899.

Plate 14 exhibits the differences between the proportions of chlorine at the different cross-section points at the "Chain of Rocks," and also shows the seasonal variations of chlorine at these points. The small circles place the dates and show also the proportions of chlorine.

Upon Plate 5 the proportions of chlorine at the several stations are represented by means of columns, and in addition to the various features discussed above (page 72), the cross-section of the Mississippi at Alton is shown in Group 3. This shows the fact repeatedly referred to, that the Illinois River water hugs the Illinois shore and does not mix very much with the Mississippi for a considerable distance below the mouth at Grafton.

Albuminoid Ammonia, Total and Dissolved.—Plate 6 gives similar representation to the facts concerning albuminoid ammonia, including also that part which is in solution.

Organic Nitrogen, Total and Dissolved.—Plates 7 and 8 present in general similar features to those already referred to in the description of Plates 4 and 6, but the particular substances represented upon Plates 7 and 8 are the total organic nitrogen and the dissolved organic nitrogen. By total organic nitrogen, we mean all the nitrogen contained as a constituent part of organic matters, including living organisms themselves. It includes that which is referred to above as albuminoid nitrogen, or nitrogen as albuminoid ammonia, and in general is from two to three times as much as the latter. (See also page 68.) An inspection of the curves and columns shows variations in the quantity of nitrogen in these forms, which are similar in most respects to those described above with reference to Plates 4 and 7, and the general conclusion there, as to the diminution

of these substances as the waters pass down the Illinois River Valley, applies here.

The dissolved organic nitrogen is, of course, derived from those nitrogenous organic matters which are actually in solution in the water, while the total organic nitrogen includes not only this but also the nitrogen contained in such matters as are suspended in the water. Group 2, Plate 7, and Group 3, Plate 8, include comparisons of the proportions of total organic nitrogen contained in the waters of the Illinois, the Missouri and the Mississippi rivers for the periods in question.

The Illinois River water we find contained a considerably smaller proportion of total organic nitrogen during the summer of 1900 than it did in 1899, and in each of these years the proportion was less than that contained in the waters of the Mississippi, and about one-fourth to one-third that contained in the waters of the Missouri River.

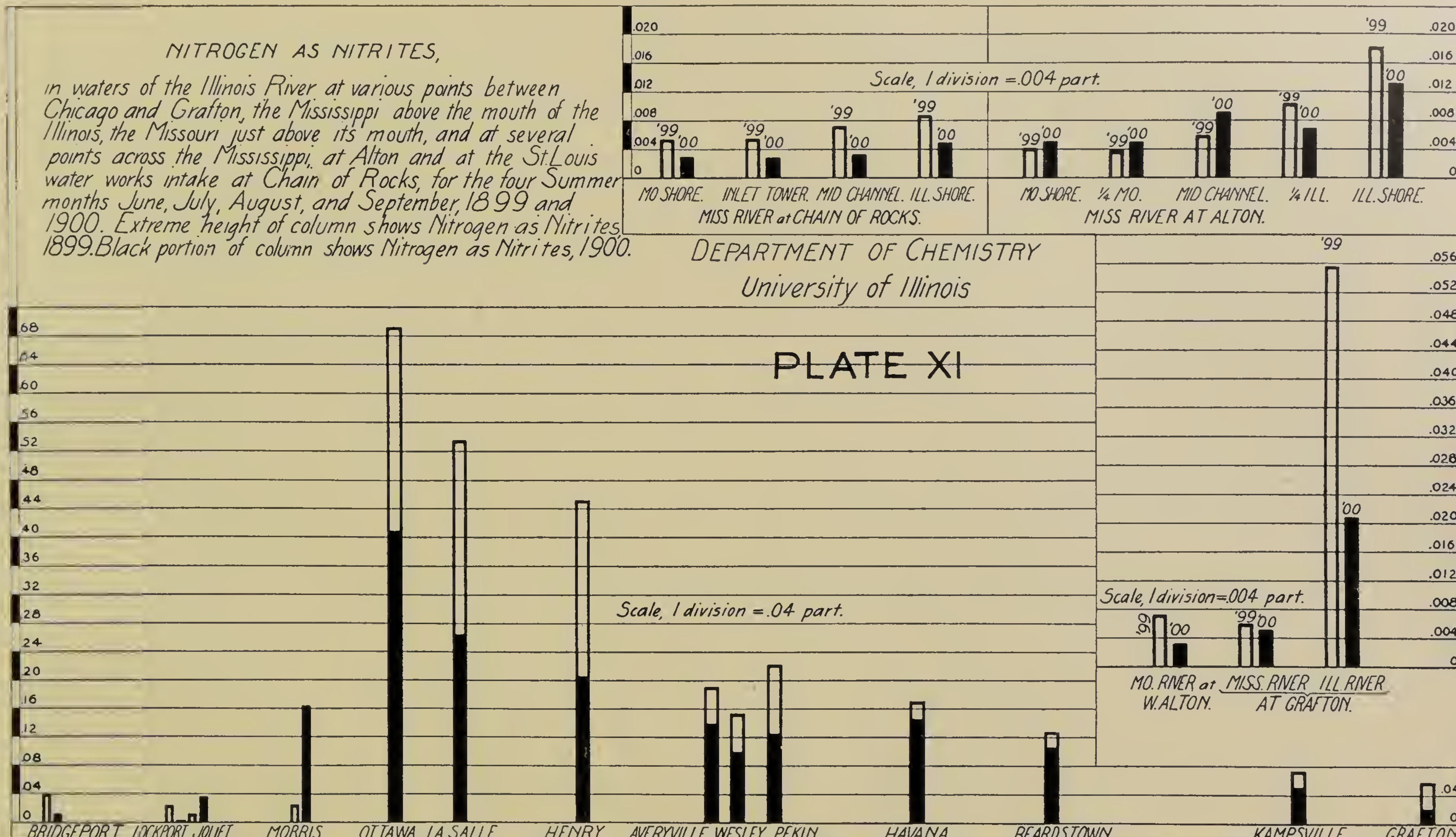
The Mississippi River water was, in this respect, somewhat better during the summer of 1900 than during the summer of 1899, but the Missouri River contained considerably greater proportions of total organic nitrogen during the summer of 1900 than it did during the summer of 1899.

These comparisons give expression to the fact that the nitrogenous organic matters in solution, which are here represented by the term organic nitrogen in solution, are contained in the Illinois River water in greater proportion than in the waters of the Mississippi or in the waters of the Missouri River, but it is noticeable that the difference between these streams has been considerably less during the summer of 1900 than it was during the summer of 1899. In the waters of the Missouri River there was somewhat more in 1900 than in 1899, but the difference is slight. For the Mississippi and the Illinois, however, there are, as represented, considerable differences, indicating a better condition of their waters in this respect during the summer of 1900 than during the summer of 1899. The striking differences between these three streams with respect to the proportions of suspended nitrogenous organic matters becomes clearly manifest upon inspection of the unshaded portions of the columns of Plate 8.

Group 3, of Plate 7, and Group 2, Plate 8, show comparisons of the quantities of total organic nitrogen and of dissolved organic nitrogen in the waters of the Mississippi at four different points across the stream at Mitchell ("Chain of Rocks"). The points are the same as those referred to on Plate 4. It is evident, from inspection of the lines, that the quantities of organic nitrogen in the water have been considerably less all across the stream during the summer of 1900 than they were during the summer of 1899, and that there is even greater difference between the waters passing down the Illinois side and those passing down beside the intake tower during the year 1900 than there was during the year 1899.

The curves and columns representing the dissolved organic nitrogen show less marked differences between the waters at the two sides of the stream, although in both years the proportion is greater on the Illinois side.

At the left hand of Group 3, Plate 7, and in Group 4, Plate 8, we have similar data for a cross-section of the stream at Alton, Ill. It should


NITROGEN AS NITRITES,
in waters of the Illinois River at various points between Chicago and Grafton, the Mississippi above the mouth of the Illinois, the Missouri just above its mouth, and at several points across the Mississippi, at Alton and at the St. Louis water works intake at Chain of Rocks, for the four Summer months June, July, August, and September, 1899 and 1900. Extreme height of column shows Nitrogen as Nitrites 1899. Black portion of column shows Nitrogen as Nitrites, 1900.
Scale, 1 division = .004 part.
MO SHORE. INLET TOWER. MID CHANNEL. ILL. SHORE.
MISS RIVER at CHAIN OF ROCKS.
MO SHORE. ¼ MO. MID CHANNEL. ¼ ILL. ILL. SHORE.
MISS RIVER AT ALTON.
DEPARTMENT OF CHEMISTRY
University of Illinois
PLATE XI
Scale, 1 division = .04 part.
Scale, 1 division = .004 part.
MO. RIVER at W. ALTON.
MISS. RIVER ILL. RIVER AT GRAFTON.
BRIDGEPORT. LOCKPORT. JOLIET. MORRIS. OTTAWA. LA SALLE. HENRY. AVERYVILLE. WESLEY. PEKIN. HAVANA. BEARDSTOWN. KAMPSVILLE. GRAFTON.

be understood that at Alton and at the "Chain of Rocks," throughout the time that the examinations were under way, samples were collected each week or oftener, and that the curves are drawn to represent the averages covering the periods of the four summer months in question. The curves and columns which represent the conditions at Alton show a notable difference between the waters at the two sides of the main stream of the Mississippi River, the total nitrogenous organic matters being present in greater proportion toward the Missouri side, that part which is in solution being present in greater proportion toward the Illinois side, while for nitrogenous matters in suspension the conditions are reversed, the proportion being far greater toward the Missouri side than it is toward the Illinois side of the stream.

Free Ammonia and Nitrites.—Plates 9 and 10 represent the proportion of nitrogen as free or saline ammonia and of nitrogen as nitrites contained in the waters of the Sanitary Canal, the Desplaines River and the Illinois River at various points between Chicago and the mouth of the river at Grafton. After what has been said concerning similar plates presenting other important constituents, but little explanation is needed in order to understand the meaning of the curves of Plate 9 or the columns of Plate 10, with reference to the purification of the stream.

The total organic nitrogen and the albuminoid nitrogen referred to in the description of Plates 4, 6, 7 and 8 represent waste organic matters, which may be derived from either vegetable or animal sources. All vegetable and animal organisms contain as essential constituents substances which in their original condition, and also in certain various stages of decomposition, are classed as nitrogenous organic matters. Such matters are included in feces and urine, in wastes from the household, in wastes from all industries which utilize plant and animal substances or products, as well as in the vegetable substances contained in soils, and which accumulate in swamps and in forests. Those substances which make sewage and animal wastes in general offensive to the senses and dangerous to the health are, as a rule, nitrogenous organic substances, either living organisms or the products or wastes of living things. The natural processes of purification of sewage and similar organic wastes involve the oxidation of these nitrogenous matters. The first stage in the purification process includes such a decomposition of these substances as results in the liberation of a portion of their nitrogen, together with hydrogen in the form of ammonia. This may remain merely dissolved in the water, or it may unite with acids, particularly with the carbonic acid, which in these decompositions of the organic matters may be formed simultaneously with ammonia and appear as salt of ammonia. Ammonia is not ordinarily contained in surface waters in notable quantities, except it be derived from the sources above mentioned. The proportion of free ammonia contained in the water of a stream or in sewage indicates, on the one hand, the relative quantity of refuse matters contained and, on the other hand, shows the stage of decomposition.

Referring to Plates 9 and 10, we may observe that in 1899 a considerable proportion of nitrogen as free ammonia was contained in the water of the Illinois and Michigan Canal, and that, although the propor-

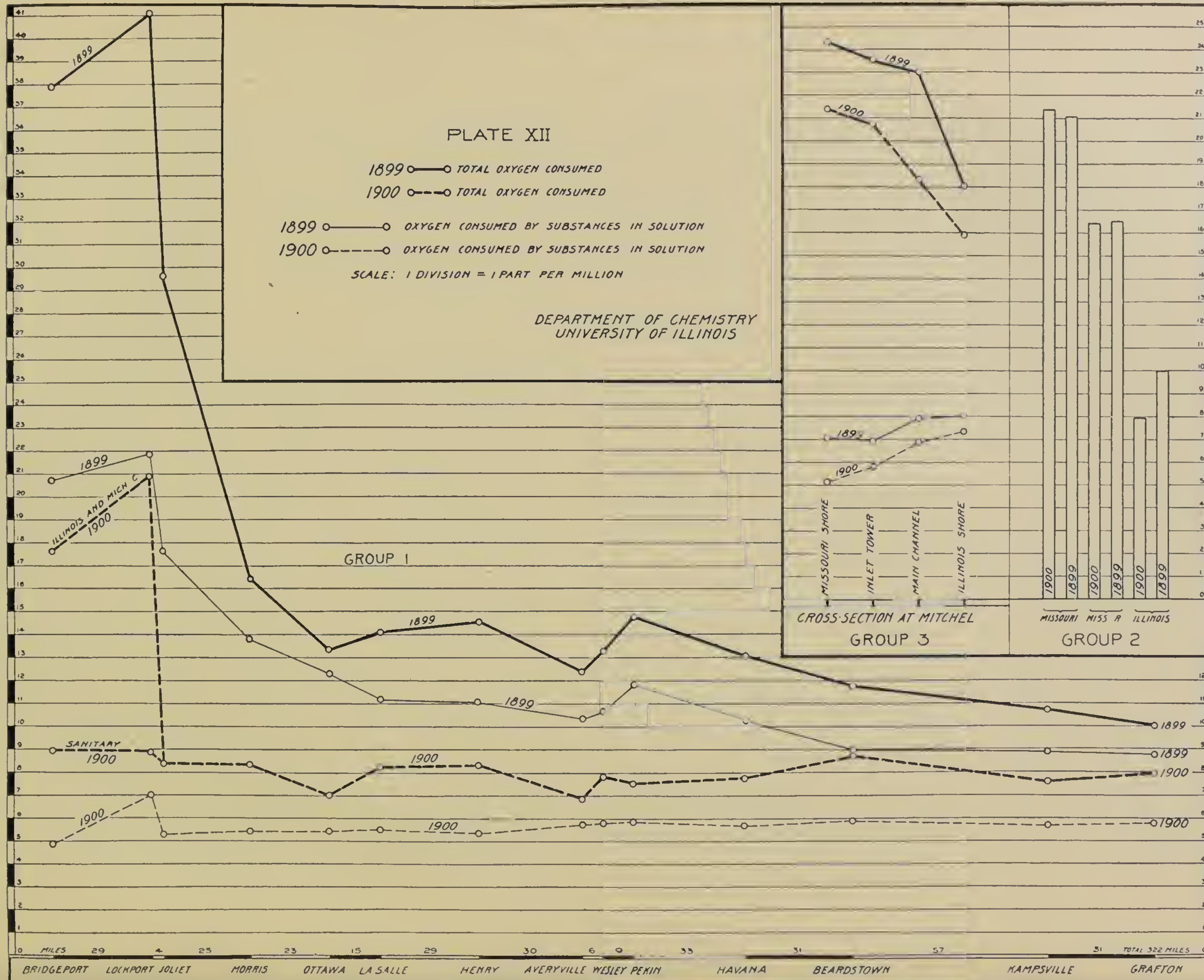


PLATE XII
1899 TOTAL OXYGEN CONSUMED
1900 TOTAL OXYGEN CONSUMED
1899 OXYGEN CONSUMED BY SUBSTANCES IN SOLUTION
1900 OXYGEN CONSUMED BY SUBSTANCES IN SOLUTION
SCALE: 1 DIVISION = 1 PART PER MILLION
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
GROUP 1
ILLINOIS AND MICH C
SANITARY
CROSS-SECTION AT MITCHEL
GROUP 3
MISSOURI SHORE
INLET TOWER
MAIN CHANNEL
ILLINOIS SHORE
GROUP 2
MISSOURI
MISS R
ILLINOIS
MILES 29 4 25 23 15 29 30 6 9 33 31 57 31 TOTAL 322 MILES
BRIDGEPORT LOCKPORT JOLIET MORRIS OTTAWA LA SALLE HENRY AVERYVILLE WESLEY PEKIN HAVANA BEARDSTOWN KAMPSVILLE GRAFTON

tion contained in the Desplaines River at Joliet was considerably diminished through mixing with the waters of the Upper Desplaines River, yet considerable proportions of free ammonia were found in the river as far down as La Salle, but that the diminution still proceeded as we pass down the river till we find the minimum at Averyville. Below Averyville the free ammonia increased in proportion again, reaching the maximum at Pekin, diminishing then more rapidly and continuously until the mouth of the river at Grafton is reached.

The curve for 1900 shows, of course, the effect of dilution with lake water in the Sanitary Canal, i. e., the proportions of nitrogen as free ammonia never were so great in the water flowing between the upper end of the canal and the points between that and Grafton as they were in the preceding year in the Illinois and Michigan Canal and the Desplaines and the Illinois rivers. Otherwise the curves show similar features, i. e., the very rapid diminution of free ammonia until we reach Averyville shows that the natural decomposition of the organic matters is taking place very vigorously in the upper reaches of the stream; that this action diminishes as we proceed down the stream, the indication being that the diminution of the bacterial action is caused mainly by the exhaustion of the nutrients, i. e., the supply of substances which are being converted by bacteria through ammonia into other innocuous forms of matter, and which may be regarded as the food supply of the bacteria, is more rapidly diminishing.

It is notable that the proportion of free ammonia increases again below Averyville, but afterward diminishes, until we find at the mouth of the river considerably less than elsewhere along the course of the stream, and less during the summer of 1900 than during the summer of 1899.

Upon Plate 9 there are two curves, and upon Plate 11 various columns representing the proportions of nitrogen as nitrites. Nitrites are oxidation products derived from the nitrogenous organic matters above referred to. In the conversion of objectionable and harmful nitrogenous organic matters into innocuous substances, the nitrites mark a stage following that which is indicated by the presence of free ammonia.

The curve for 1899 shows the maximum content of nitrites at Ottawa. From there on considerable diminution occurs until we reach Averyville and Wesley, but beyond that point there is again an increase; we find the maximum at Pekin, beyond which point there is a gradual decrease until we reach the minimum at the mouth of the river at Grafton.

The two maxima indicate the two zones in the river at which the second stage of the natural purifying processes is most vigorously under way.

Referring now to the curve for 1900, it becomes evident that the increase in the proportion of nitrites becomes marked very much nearer the source of the sewage, i. e., since most of the sewage has been diluted before it is discharged into the Desplaines River Valley, those natural decompositions and oxidations of the organic matters which result in the formation of nitrites, and subsequently nitrates, have begun vigorously at a point much nearer Chicago.

The point at which the maximum quantity of nitrites is found during the summer of 1900 is again at Ottawa, as during 1899. From there the curve varies in general in the same direction, but it is notable that the minimum is less than during the earlier season, and that the maximum never reaches the high proportion found during 1899.

Consideration of the curves shows that the zones at which the purifying action takes place with the greatest vigor are in the vicinity of Ottawa and the stretch of river between Pekin and Havana, under both sets of conditions, i. e., those conditions prevailing during the summer of 1899 and those prevailing during the summer of 1900, or both before and after the opening of the Drainage Channel.

Study of the various figures of the tables and the curves of the plates reveals the fact that in each of the summers in question there was less nitrogenous organic matter contained in the water of the Illinois River at Ottawa, just above the mouth of the Fox River, than was contained in the river water at points farther down its course, except at Averyville and at Grafton. This may in part result from incomplete mixing in the upper river, but is undoubtedly due in part to the fact that organic matters of animal origin, such as constitute the chief organic matters of sewage. are more easily susceptible to the putrefactive and oxidizing influences which bring about the purification of waters; while vegetable matters, which constitute the greater part of the organic matters found in the natural waters of swamps and streams, such as are contributed in larger proportion to the Illinois by its tributaries, and by the run-off from its own slopes, are less easily decomposed and persist in the water of the lower river in greater proportion. Moreover, vegetation, particularly of the minuter and floating forms—i. e., the plankton—is very abundant in the waters of the lower stretches of the river from La Salle down. The nitrites and nitrates produced abundantly in the waters of the upper river, through the decompositions of the nitrogenous organic matters of sewage, are in turn utilized by the vegtation, and in part their nitrogen is built up into more stable and less objectionable nitrogenous organic matters, which remain floating or dissolved in the waters, and appear in the analytical results, but must be regarded with much less disfavor and objection than would be accorded a like quantity of nitrogenous matters of animal origin.

Oxygen Consumed.—Upon Plates 10 and 13 are shown curves and columns representing the proportions of oxygen consumed by the water in the Illinois River at the various points as indicated on the other charts. It is obvious that the water in the upper stretches of the river contains a great deal more of such organic matters as are easily susceptible to oxidizing agencies than does the water in the lower stretches of the river.

The diminution in 1899 was very rapid until we reach Ottawa and Averyville. Below Averyville it increases in quantity, owing to the discharge of sewage and wastes into the river at Peoria and at Pekin. Below Pekin there is a continuous diminution in these matters until the mouth of the river is reached. Similar points appear when we consider the total oxygen consumed by the matters in solution in the water, i. e., the filtered water.

The curves for 1900 show variations at different points along the river and make manifest the fact that the proportion of easily affected organic matters in the water is considerably less than during the corresponding season of 1899, though there is not such a great relative diminution along the course of the river.

Group 2 of Plate 12 represents a comparison of the relative quantities of oxygen consumed by the waters of the Illinois River, those of the Mississippi river and those of the Missouri River. It is evident that the waters of the Illinois River contained considerably less readily oxidizable matter in the summer of 1900 than in the summer of 1899. In the case of the Mississippi River water, it is evident that the proportion of oxidizable matters far exceeds that contained in the Illinois River water, and that the proportion is practically the same for the two seasons, viz., 1899 and 1900.

In the case of the Missouri River water, the proportion of oxidizable matters is greater in 1900 than in 1899; in both years it is much greater than the proportion contained in the Mississippi River, and at least twice as great as the proportion contained in the water of the Illinois River. On the other hand, comparison of the proportionate quantities of oxygen required by dissolved organic matters shows that there is less required by the waters of the Missouri River than by the waters of the Mississippi or those of the Illinois River.

In 1899 the quantity required by the water of the Illinois River was considerably greater than in 1900; also by the Mississippi River water more was required during the summer of 1899 than during the summer of 1900; but in each year the quantity required by the Mississippi River water was greater than the quantity required by the Illinois River water.

Group 3 of Plate 12 shows the relative quantities of oxygen consumed by water samples collected at the four points across the stream of the Mississippi River at the "Chain of Rocks," or Mitchell. It is evident that the water along the Missouri shore, and in the vicinity of the intake tower, contains much greater quantities of organic matters than does the water which passes down near the Illinois shore. On the other hand, the dissolved, readily-oxidizable matters contained in the water near the intake tower are less in proportion than those contained in the water near the Illinois shore.

Plate 13 presents similar facts by means of columns.

Considering the evidence represented by the columns in Group 1, and that of the curves of Group 3, of Plate 12, it appears that the water passing down near the Missouri shore and past the intake tower of the St. Louis waterworks, is much more nearly like the water of the Missouri River than it is like that of either the Mississippi River in its upper stretches or the Illinois River in its lower stretches.

Dissolved Oxygen.—The results of our determinations of dissolved oxygen in some four hundred samples of water from the Illinois River have shown that the waters of the Illinois River at all times contain a considerable percentage of the quantity of oxygen which is required for saturation, and that at times it contains much more than the saturation

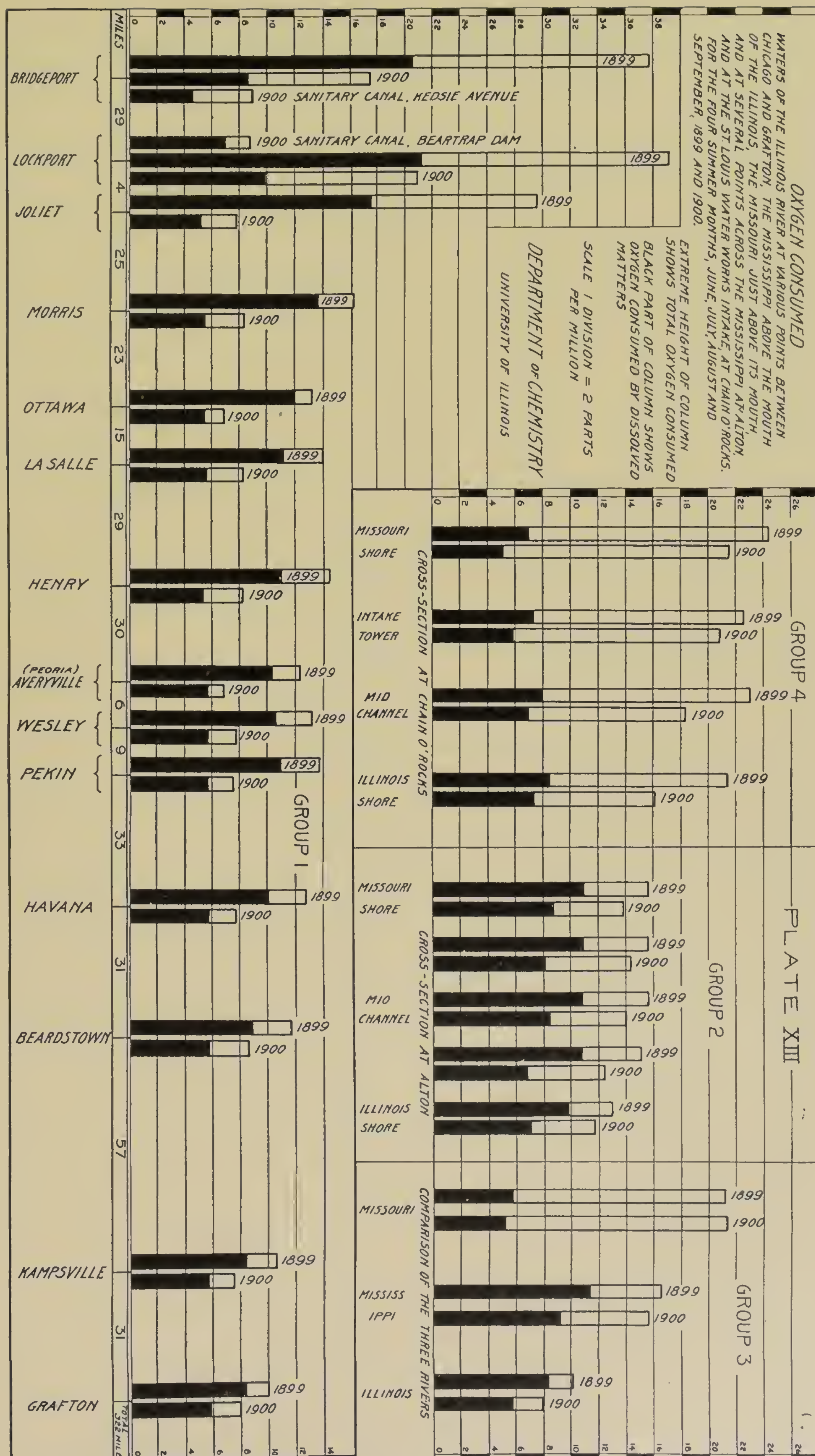


PLATE XIII
OXYGEN CONSUMED
WATERS OF THE ILLINOIS RIVER AT VARIOUS POINTS BETWEEN CHICAGO AND GRAFTON, THE MISSISSIPPI ABOVE THE MOUTH OF THE ILLINOIS, THE MISSOURI JUST ABOVE ITS MOUTH, AND AT SEVERAL POINTS ACROSS THE MISSISSIPPI AT ALTON, AND AT THE ST. LOUIS WATER WORKS INTAKE, AT CHAIN O'ROCKS. FOR THE FOUR SUMMER MONTHS, JUNE, JULY, AUGUST AND SEPTEMBER, 1899 AND 1900.
EXTREME HEIGHT OF COLUMN SHOWS TOTAL OXYGEN CONSUMED
BLACK PART OF COLUMN SHOWS OXYGEN CONSUMED BY DISSOLVED MATTERS
SCALE 1 DIVISION = 2 PARTS PER MILLION
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
MILES
BRIDGEPORT
LOCKPORT
JOLIET
MORRIS
OTTAWA
LA SALLE
HENRY
(PEORIA) AVERYVILLE
WESLEY
PEKIN
HAVANA
BEARDSTOWN
KAMPSVILLE
GRAFTON
TOTAL 322 MILES
1900 SANITARY CANAL, KEDSIE AVENUE
1900 SANITARY CANAL, BEARTRAP DAM
GROUP 1
CROSS-SECTION AT CHAIN O'ROCKS
MISSOURI SHORE
INTAKE TOWER
MID CHANNEL
ILLINOIS SHORE
GROUP 4
CROSS-SECTION AT ALTON
MISSOURI SHORE
MID CHANNEL
ILLINOIS SHORE
GROUP 2
COMPARISON OF THE THREE RIVERS
MISSOURI
MISSISSIPPI
ILLINOIS
GROUP 3

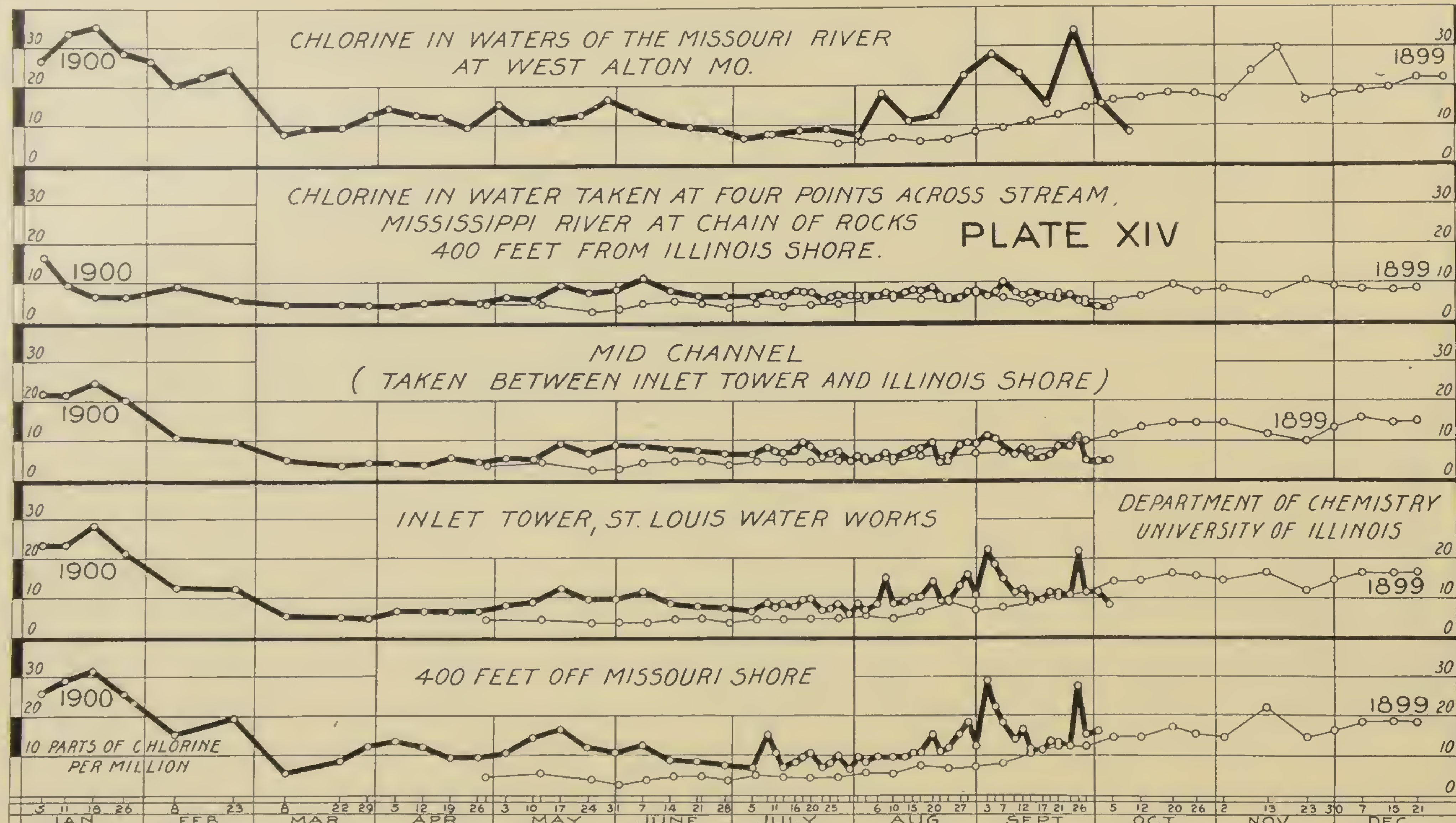


PLATE XIV
CHLORINE IN WATERS OF THE MISSOURI RIVER AT WEST ALTON MO.
CHLORINE IN WATER TAKEN AT FOUR POINTS ACROSS STREAM, MISSISSIPPI RIVER AT CHAIN OF ROCKS
400 FEET FROM ILLINOIS SHORE.
MID CHANNEL (TAKEN BETWEEN INLET TOWER AND ILLINOIS SHORE)
INLET TOWER, ST. LOUIS WATER WORKS
400 FEET OFF MISSOURI SHORE
DEPARTMENT OF CHEMISTRY UNIVERSITY OF ILLINOIS
10 PARTS OF CHLORINE PER MILLION
1900
1899
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

figure; indeed, occasionally, at certain points, it contains even more than double the saturation quantity. The supersaturation of the water with oxygen, if we may so term it, is due to the liberation of oxygen by the chlorophyl-containing micro-organisms and other minute plants, which are very abundant in the waters of the Illinois at certain seasons of the year; in fact, oxygen-evolving organisms seem to be always present and almost always active in these waters.

Many of the determinations have been made upon the spot, but inasmuch as circumstances rendered it impracticable for us to make very extensive series of determinations in this way, the samples of water were, throughout a considerable portion of the time, shipped to the laboratory and the determinations of dissolved oxygen made there ordinarily in about twenty-four hours after the time of collection, but sometimes not until forty or forty-eight hours had lapsed from the time of collection. These shipped samples gave results which are always less than the saturation figure, except upon a few occasions when the original water was highly supersaturated with oxygen.

Comparison of the results of determinations made upon the spot with those made upon duplicate samples, which were either shipped to the laboratory or kept under similar conditions to those involved in shipping, show that there was in all cases a notable diminution of dissolved oxygen during the time which elapsed between the time of collection and the time of making the examinations. Consequently, it is certain that the actual content of dissolved oxygen in all these waters was in reality greater than the results here recorded. There was but one case in which a greater percentage of dissolved oxygen was found in a sample which had been kept. (See page 65, Averyville.)

Dissolved Oxygen in the Water of the Illinois River at Its Mouth at Grafton.—The series of determinations of dissolved oxygen which appear in the tables upon pages 95a and 95g show that during the period January 4 to June 27, 1900, the percentage of saturation in the Illinois River water ranged from 43.1 to 95.7, the average being 76.47 per cent for the entire series of 141 shipped samples. As is seen in the date columns the determinations were made upon samples shipped to the laboratory and usually about twenty-four hours after collection. The minimum, 43.1 per cent, was found in the case of four samples collected May 16 and examined May 18. In no other case was less than 52.7 per cent found, and, indeed, in but five other samples was less than 61 per cent dissolved oxygen found.

Dissolved Oxygen in the Waters of the Mississippi at Grafton.—A parallel series of determinations of dissolved oxygen in the waters of the Mississippi, just above the mouth of the Illinois, was made upon samples collected at the same time—i. e., within a few minutes—and shipped and examined under similar conditions. The details appear in the tables upon pages 95c and 95e. The degree of saturation in these ranged from 55.78 per cent to 108.84 per cent, the average for the entire series of 127 samples being 82 per cent.

Comparison of the data obtained from these series of shipped samples

shows that the waters of the Illinois contained 93.2 per cent of the quantity of dissolved oxygen found in the waters of the Mississippi.

Analyses made upon the spot (see tables, pages 95c and 95e) show that both the Illinois River water at Grafton and the Mississippi River water at Grafton frequently contain a greater proportion of dissolved oxygen than is required for saturation, but each of them also frequently contains less dissolved oxygen than the saturation figure requires. In general, it is true that the waters of the Illinois do not retain their dissolved oxygen so long as do the waters of the Mississippi—that is, the dissolved oxygen diminishes more quickly and to a greater extent in the water of the Illinois than it does in the water of the Mississippi River, although the difference between the two river waters in this respect is not very great, as may be seen by study of the data of the tables.

The Upper Illinois.—In the Illinois River at La Salle, just above the town, upon August 16, 1899, we found the water 18 inches below the surface just saturated with dissolved oxygen, the actual figures being 100.12 per cent, 100.12 per cent and 100.36 per cent, in samples taken at different points across the stream. A sample of the water taken at the same time, but examined twenty-four hours later, contained but 75.7 per cent of dissolved oxygen, while still another sample collected at the same time as the three above mentioned, but kept forty-one hours, contained but 58 per cent of the amount required for saturation. The evidence would seem to show that although during sunshine oxygen was being evolved by the vegetable life in the water with sufficient rapidity to keep the water saturated, yet when the conditions were changed by placing the sample in the dark, such action ceased, and the oxygen began rapidly to disappear.

Similar conditions were found with respect to the water of the Illinois and Michigan Canal at La Salle. The water of the upper basin at La Salle was, before the opening of the Sanitary Canal, in better condition ordinarily than was the water of the Illinois River at this point, for the reason that the canal above La Salle is fed from the Fox River and other streams. The records with respect to the water in this place, as given in Table 95a, show that the water in its original condition contained 102.42 per cent, while after standing twenty-four hours it was reduced to 62.26 per cent.

Upon August 17 somewhat striking conditions were found at Henry. The samples were taken above the dam at 1:15 p. m. upon a bright day, the temperature of the water, 32 degrees C., being very nearly as high as was that of the air, which in the shade was 34 degrees (?). A sample of the water taken one inch below the surface was found to contain considerably more than twice the amount of oxygen required for saturation, presuming, of course, the saturation figure should be that for an equilibrium between the oxygen of the atmosphere and that of the water.

The water was full of minute vegetable organisms and it had a very distinct yellowish green tint. The temperature of the top inch of water was 32 degrees C. The quantities of dissolved oxygen found by the Levy method were 220.9 per cent and 211.4 per cent respectively. Samples taken at the same time and place, but at 18 inches below the surface, had a temperature of 28 degrees C., and were found, by the Levy method, to

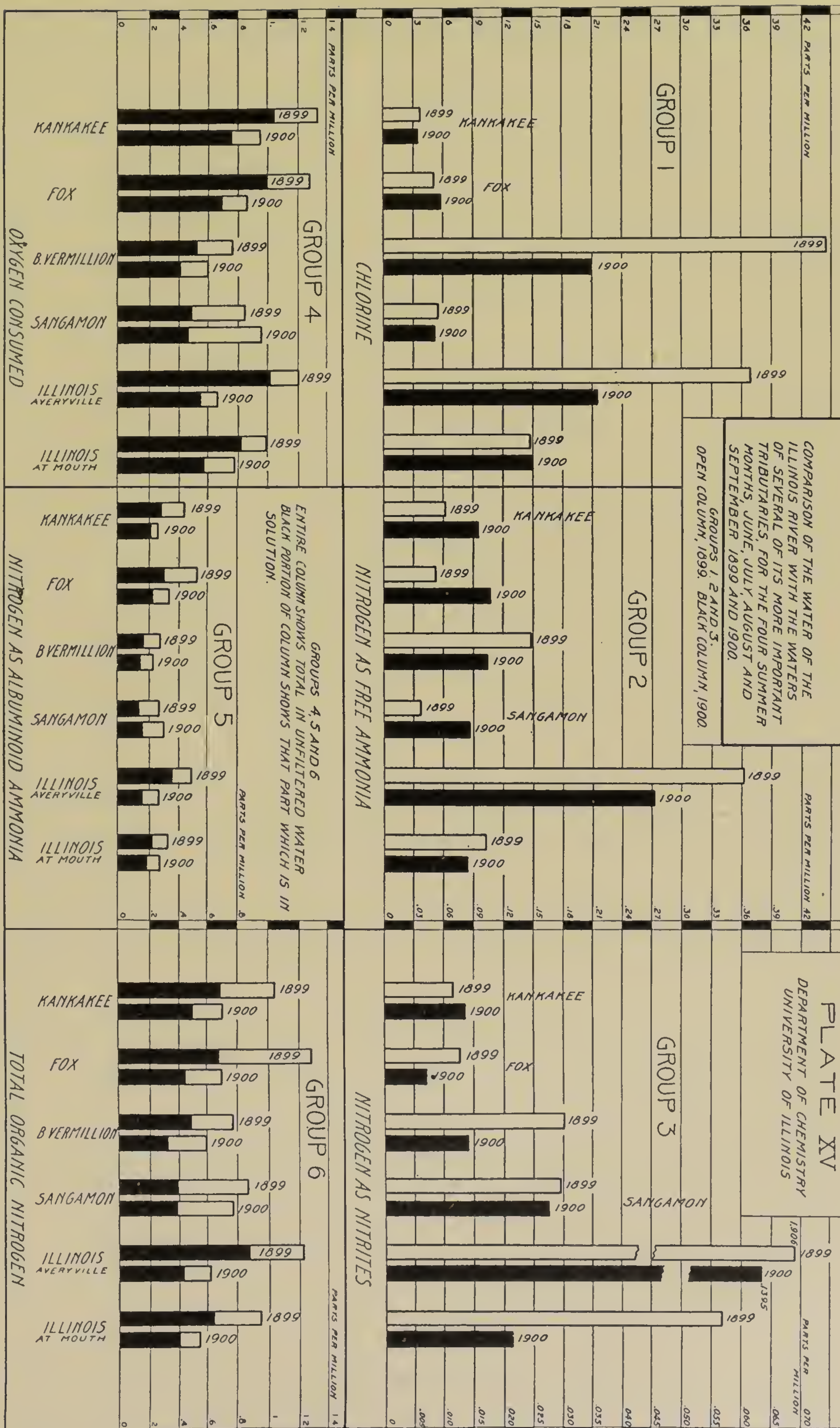


PLATE XV
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
COMPARISON OF THE WATER OF THE ILLINOIS RIVER WITH THE WATERS OF SEVERAL OF ITS MORE IMPORTANT TRIBUTARIES, FOR THE FOUR SUMMER MONTHS, JUNE, JULY, AUGUST AND SEPTEMBER 1899 AND 1900.
GROUPS 1, 2 AND 3. OPEN COLUMN, 1899. BLACK COLUMN, 1900
GROUPS 4, 5 AND 6 ENTIRE COLUMN SHOWS TOTAL IN UNFILTERED WATER BLACK PORTION OF COLUMN SHOWS THAT PART WHICH IS IN SOLUTION.
GROUP 1
CHLORINE
GROUP 2
NITROGEN AS FREE AMMONIA
GROUP 3
NITROGEN AS NITRITES
GROUP 4
OXYGEN CONSUMED
GROUP 5
NITROGEN AS ALBUMINOID AMMONIA
GROUP 6
TOTAL ORGANIC NITROGEN
KANKAKEE
FOX
B. VERMILLION
SANGAMON
ILLINOIS AVERYVILLE
ILLINOIS AT MOUTH
1899
1900
PARTS PER MILLION
.1306
.1395

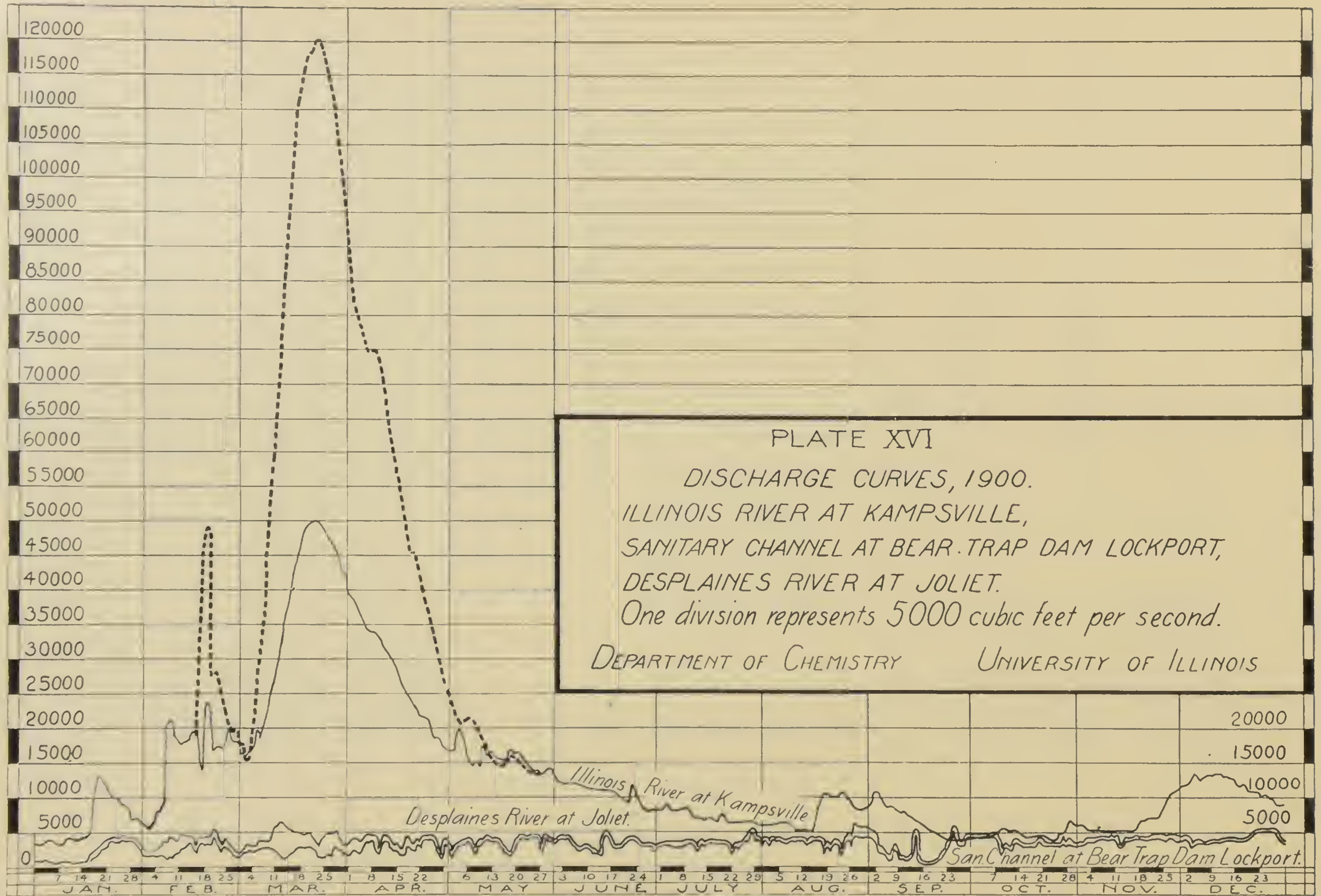


PLATE XVI
DISCHARGE CURVES, 1900.
ILLINOIS RIVER AT KAMPSVILLE,
SANITARY CHANNEL AT BEAR.TRAP DAM LOCKPORT,
DESPLAINES RIVER AT JOLIET.
One division represents 5000 cubic feet per second.
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS
Illinois River at Kampsville
Desplaines River at Joliet.
San Channel at Bear Trap Dam Lockport.
120000
115000
110000
105000
100000
95000
90000
85000
80000
75000
70000
65000
60000
55000
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEP.
OCT.
NOV.
DEC.

contain dissolved oxygen corresponding to 200 per cent of saturation and 208.3 per cent of saturation respectively; while the determination made by the Winkler method showed 208.35 per cent. A sample collected at the same time and kept until the next day, the analysis being made twenty-four hours after the time of collection, during which time the sample was kept in the dark, was found to contain 110.1 per cent of the saturation figure. At the same time and place a collection was also made at two feet from the bottom, or ten feet below the surface. At this depth also the water was found to be supersaturated, but far less so than the water at the surface; it contained 129.1 per cent. The dissolved oxygen in the water from near the bottom disappeared much more rapidly and was reduced far more proportionately than in the water from near the surface, the percentage remaining at the end of twenty-four hours being 47.42. This difference as to retention of dissolved oxygen was undoubtedly due to a difference in either the plankton or the other organic matters contained in the water in these two different strata.

Averyville.—Several visits were made to Averyville, just above Peoria, for the purpose of making determinations upon the spot, and some of these have developed quite interesting results. Thus, upon July 21, 1899, the water, 18 inches below the surface, was found, late in the afternoon, to contain about 171 per cent of the saturation figure of dissolved oxygen, and the water was still supersaturated with oxygen when samples, which were kept in the dark, were again examined eighteen hours and twenty-four hours later, after the lapse of this time the figure being 115 to 117 per cent.

The quantity of dissolved oxygen in samples collected at the same spot the following morning was found to be only 87.8 per cent, but during the morning it increased slightly to 95.6 per cent at 10:10, reaching 111.7 per cent at 12:20 p. m. and 114.3 per cent at 1:10 p. m., at which time the examinations were stopped by the necessity for catching a train. Samples collected at the same time were kept over for two days, and it was found that the quantity of dissolved oxygen had diminished in forty-eight hours from 114 per cent to from 38 to 40 per cent. (See Table on page 95a.)

Upon August 17, late in the afternoon, the quantity of dissolved oxygen found in the water at the depth of 18 inches, at Averyville, was 80.5 per cent, while the water coming from about two feet above the bottom in fourteen feet of water contained 74 per cent of the saturation figure. A sample of the water taken 18 inches below the surface at 6:30 p. m., which was kept until the next day, was found to contain a considerably higher quantity of dissolved oxygen than the sample which was examined at the time of collection. The determination on the spot gave 80.49 per cent, and that made twenty-four hours later gave 97.53 per cent. It may be that this is an error, but it is possible that in this case some more hardy oxygen-evolving organisms than usual were contained in the water, and that during the following day, which was excessively hot, light was not entirely excluded from the sample, or the original content of oxygen may possibly have been quite different, for, as is evident from the records for

the 19th, when this point was again visited, the water, earlier in the afternoon, was supersaturated.

Upon August 19, at 12:30 p. m., a sample taken 18 inches below the surface contained 184 per cent; another taken at the same point, but three hours later, contained slightly more than 200 per cent, and a sample collected at 4 o'clock contained 215 per cent; another collected at 4:25 contained 215.7 per cent, while samples of water collected one and one-half hours later at the same point and under the same conditions, were found to contain 95.6 per cent dissolved oxygen.

During the time that these examinations were made the surface of the water was marked here, there and everywhere with patches of blue-green scum, the size of a man's hand, apparently consisting of masses of filamentous algæ, etc. The current was quite rapid, and these patches were about two or three feet apart in various directions. The samples were taken under such conditions as to exclude these floating matters from the sample of water upon which the test was made. The sun was shining very brightly, and the temperature was very high. These examinations were made at the Averyville bridge, where the river is very narrow and the current rapid. Between this point and Henry, about thirty miles above, the river spreads out to a considerable width, forming a series of so-called pools, lakes or lagoons, in which the current is very sluggish. In these broad stretches the conditions of depth, spread of surface, temperature and rate of movement are in the summer season especially favorable for the development of plant life, and the water consequently so teems with green and blue-green organiss that oxygen is evolved in great abundance; in fact, may frequently be seen coming from the floating plants in streams of minute bubbles.

During the middle of the day, when the chemical activity of the sun's rays is at the maximum, the evolution of oxygen naturally will be at the maximum and the water then become supersaturated, but as the sun sinks toward the west the action slackens and the excess of oxygen begins to disappear; partly, perhaps, by diffusion into the atmosphere, but undoubtedly in the main through absorption by the organic matters either living or dead contained in the water.

The water which was found to be supersaturated at Averyville doubtless received its oxygen mainly at some distance above, and the rather sudden drop from 215 per cent to 95.6 per cent was, in all probability, due to the fact that a new body of water, which in the late hours of the afternoon had not been exposed to such vigorous action as prevailed earlier in the day, began to reach the point of collection. This change may also have been partly due to the fact that as evening approached the sun was in part obscured from the particular point at which these examinations were made by dropping below the high wooded bluffs which line the west bank of the river in this vicinity.

Later in the year—i. e., upon October 16—another series of examinations was made at Averyville, but at this time the conditions were entirely different. The quantity of dissolved oxygen reached but 74.5 per cent to 77.5 per cent.

PLATE XVII.

STAGES OF WATER IN THE MISSISSIPPI RIVER AT ALTON, DURING THE YEARS 1899 AND 1900.

SCALE, 1 DIVISION = 1 FOOT.

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF ILLINOIS

Examinations which were made during January, 1900, gave similar results to those just mentioned for October, 1900. Examinations made in June, 1900, showed figures which were considerably below those obtained in July and August of the preceding year. It is unfortunate that we did not have an opportunity to make determinations in 1900 upon the same dates as in 1899, for in June the season is not sufficiently advanced to bring about the conditions which are commonly encountered in the latter part of July and the middle of August.

The results obtained in October, 1900, were practically identical with those obtained in October, 1899, which would seem to imply that the opening of the Drainage Channel has not materially changed the conditions with respect to dissolved oxygen at this point and for this season of the year.

Dissolved Oxygen Just Below Peoria.—The few examinations made at Wesley City have always shown that the water of the river at this point contains far less than the saturation quantity of dissolved oxygen, a result due, of course, to the fact that so much sewage is discharged into the river about two or three miles above. Somewhat similar conditions were found with respect to the water at Pekin. The effect of bright sunlight is strikingly shown by comparison of the figures obtained upon August 18, in the middle of the morning, with those obtained August 19th late in the afternoon, the figures for the morning being 24 per cent, those for the afternoon averaging about 82 per cent.

Examinations of water collected early in the morning of August 19, at Havana, thirty miles below Pekin, showed but about one-third as much dissolved oxygen as would correspond to the saturation figure, while later in the day determinations by both the Levy and the Winkler methods, made at Copperas Creek dam and at Lancaster Landing, points between Havana and Pekin, showed considerable excess of dissolved oxygen. The weather was hot, 100 degrees to 108 degrees F., in the shade, and there was considerable plankton in the water, much of it appearing to consist of filamentous and other algæ.

Dissolved Oxygen in the Water of the Drainage Channel.—Several determinations were made of the dissolved oxygen in the waters of the Sanitary Canal itself. Upon August 13, 1900, an examination was made of the water in the upper end of the Sanitary Canal at Kedzie Avenue. At 5:15 in the afternoon a sample taken 18 inches below the surface was found to contain 29 per cent, and a little further down the canal—i.e., at the Belt Line bridge—at 5:40 o'clock, it was found to contain 28.2 per cent.

Upon June 29, 1900, at 5 o'clock in the afternoon, this water, just above the beartrap dam at Lockport, was found to contain 10.9 per cent of dissolved oxygen, while at 200 yards below the dam, after the water had been agitated with air in its escape from the higher level of the Drainage Channel to the bed of the Desplaines River below, the aëration had been sufficient to bring the proportion of dissolved oxygen up to 55.5 per cent of the saturation figure. Upon August 14, 1900, similar determinations showed that the water above the dam contained 5.9 per cent, and that below the dam 70 per cent of dissolved oxygen.

At Joliet, examinations made upon June 30, 1900, showed 27.8 per cent of dissolved oxygen just above Dam No. 1, while just below the dam, where the water has fallen twelve or thirteen feet, the percentage of dissolved oxygen was found to be 81.28.

In making these determinations, due care was exercised to prevent any minute bubbles of air being retained by the water which was made the subject of the examination. The entire pipette was filled with the water and was allowed to stand for a few minutes, until such bubbles as were contained in the sample collected in the upper part of the pipette and were allowed to escape.

The results obtained at Lockport and at Joliet show quite strikingly the effect of agitation of the water with air in falling over the dams.

A single determination made upon the water of the Fox River at Ottawa, August 20, showed the water of this tributary to be quite supersaturated; it contained 138.25 per cent of dissolved oxygen. The water of the Illinois and Michigan Canal, just above Channahon, was examined upon August 21 and was found to contain 3 per cent of the saturation figure of dissolved oxygen. At this time there was practically no water flowing in the bed of the Upper Desplaines below Joliet, as at Joliet all of the flow both from the Desplaines River above and from the Illinois and Michigan Canal was carried down the west bank of the river in the Canal itself.

The following tables, designated I to X inclusive, include those prepared by Professors Palmer, Jordan and Burrill.

ARTHUR W. PALMER, Sc. D.,
Professor of Chemistry, University of Illinois.

DISSOLVED OXYGEN IN THE WATER OF THE

Date of Collection.	Date of Determination.	Depth of Collection.	Mg. per Liter. 1	Mg. per Liter. 2	Mg. per Liter. Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
Sanitary Canal, Lockport.								
1900	1900							
June 29, 5:00 p.m.	June 29, 5:00 p.m.	18" below surface	1.	1.	1.	20°c	10.88	Just above BearTrap dam.
" 29, 5:45 "	" 29, 5:45 "	18" " "	5.1	5.1	5.1	"	55.5	200 yds. bel. dam.
Aug. 14	Aug. 14	18" " "	.55	.55	.55	18°c	5.88	Just above BearTrap dam.
" 14	" 14	18" " "	6.55	6.55	6.55	"	70.05	Below dam.
Sanitary Canal, Kedzie Avenue.								
1900	1900							
Aug. 13, 5:15 p.m.	Aug. 13, 5:15 p.m.	18" below surface	2.7	2.8	2.75	19°c	29.	
" 13, 5:40 "	" 13, 5:40 "	18" " "	2.6	2.7	2.65	"	28.2	
Desplaines River, Joliet.								
1900	1900							
June 30, 5:50 a.m.	June 30, 5:30 a.m.	18" below surface	2.6	2.6	2.6	18°c	27.8	Just above dam No. 1.
" 30, 6:00 "	" 30, 6:00 "	18" " "	7.6	7.6	7.6	"	81.28	Below dam in sluice.
Illinois and Michigan Canal, just above Channahan.								
1899	1899							
Aug. 21, 6:30 a.m.	Aug. 21, 6:30 a.m.	18" below surface	.3	.2	.25	26°c	3.05	
Fox River, Ottawa.								
1899	1899							
Aug. 20, 5:00 p.m.	Aug. 20, 5:00 p.m.	18" below surface	10.2	10.4	10.3	31°c	138.25	
Illinois River Water, La Salle, above Canal.								
1899	1899							
Aug. 16, 2:40 p.m.	Aug. 16, 2:40 p.m.	18" below surface	8.4	8.	8.2	26°c	100.12	
" 16, 3:05 "	" 16, 3:05 "	18" " "	8.2	8.2	8.2	"	100.12	
" 16, 4:00 "	" 16, 4:00 "	18" " "	8.2	8.25	8.22	"	100.36	
" 16, 3:30 "	" 17, 4:00 "	18" " "	6.2	6.2	6.2	"	75.70	Test of keeping qualities.
" 16, 3:30 "	" 18, 9:00 a.m.	18" " "	4.6	4.9	4.75	"	58.00	
Illinois and Michigan Canal, Upper Basin, La Salle.								
1899	1899							
Aug. 16, 4:00 p.m.	Aug. 16, 4:00 p.m.	18" below surface	8.2	8.25	8.22	27°c	102.42	
" 16, 4:00 "	" 17, 4:00 "	18" " "	6.3	6.3	6.3	"	78.45	Kept 24 hours.
" 16, 4:00 "	" 18, 10:30 a.m.	18" " "	5.	5.	5.	"	62.26	" 40 "
Illinois River Water, Henry, above Dam.								
1899	1899							
Aug. 17, 1:15 p.m.	Aug. 17, 1:15 p.m.	1" below surface	17.3	17.6	17.45	32°c	220.88	
" 17, 1:15 "	" 17, 1:15 "	1" " "	16.7	16.7	16.7	"	211.39	
" 17, 1:15 "	" 17, 1:15 "	18" " "	15.8	15.8	15.8	28°c	200.00	
" 17, 1:15 "	" 17, 1:15 "	18" " "	16.6	16.3	16.45	"	208.32	
" 17, 1:15 "	" 17, 1:15 "	18" " "	16.46	......	......	"	208.35	Winkler Method
" 17, 1:15 "	" 18, 1:30 "	18" " "	8.9	8.5	8.7	"	110.12	Test of keeping qualities.
" 17, 1:15 "	" 17, 1:15 "	2' from bottom	10.1	10.2	10.15	"	129.10	
" 17, 1:15 "	" 18, 1:30 "	2' " "	3.7	3.8	3.75	"	47.42	Test of keeping qualities.
Illinois River, Averyville.								
1899	1899							
July 21, 4:30 p.m.	July 21, 4:30 p.m.	18" below surface	13.2	13.1	13.15	29°c	169.89	
" 21, 5:00 "	" 21, 5:00 "	18" " "	13.3	13.2	13.25	"	171.18	
" 21, 5:30 "	" 21, 5:30 "	18" " "	13.1	13.2	13.3	"	171.83	
" 21, 6:00 "	" 22, 11:00 a.m.	18" " "	9.1	9.0	9.05	"	116.92	Test of keeping qualities.
" 21, 6:00 "	" 22, 6:00 p.m.	18" " "	8.9	Lost	8.9	"	111.98	
" 21, 6:00 "	" 22, 6:00 "	18" " "	9.0	9.0	9.0	"	116.27	
" 22, 8:50 a.m.	" 22, 8:50 a.m.	18" " "	6.6	6.8	6.7	"	87.85	
" 22, 9:26 "	" 22, 9:26 "	18" " "	7.1	7.1	7.1	"	91.73	
" 22, 10:10 "	" 22, 10:10 "	18" " "	7.4	7.4	7.4	"	95.60	
" 22, 12:20 p.m.	" 22, 12:20 p.m.	18" " "	8.4	8.9	8.65	"	111.75	
" 22, 1:10 "	" 22, 1:10 "	18" " "	8.9	8.8	8.85	"	111.31	
" 22, 1:10 "	" 24, 2:00 "	18" " "	2.9	3.	2.95	"	38.11	Test of keeping qualities.
" 22, 1:10 "	" 24, 2:00 "	18" " "	3.02	......	......	"	39.02	Test of keeping qualities. Winkler's.
" 22, 1:10 "	" 24, 2:00 "	18" " "	3.12	......	......	"	40.31	
" 22, 1:10 "	" 24, 2:00 "	18" " "	2.93	......	......	"	37.85	
Aug. 17, 6:30 p.m.	Aug. 17, 6:30 p.m.	18" " "	7.0	6.7	6.85	21°c	80.49	
" 17, 6:30 "	" 17, 6:30 "	2' from bottom	6.3	6.3	6.3	"	71.03	
" 17, 6:30 "	" 18, 7:05 "	2' " "	8.2	8.4	8.3	"	97.53	Test of keeping qualities.

ILLINOIS RIVER, AVERYVILLE.—Continued.

Date of Collection.	Date of Determination.	Depth of Collection.	Mg. per Liter. 1	2	Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1899	1899							
Aug. 19, 12:30 p.m.	Aug. 19, 12:30 p.m.	18" below surface	14.5	14.3	14.4	28.5°c	184.14	
" 19, 3:20 "	" 19, 3:20 "	18" " "	15.	16.	15.5	29°c	200.25	
" 19, 4:00 "	" 19, 4:00 "	18" " "	17.2	16.1	16.65	"	215.11	
" 19, 4:25 "	" 19, 4:25 "	18" " "	16.7	16.7	16.7	"	215.76	
" 19, 5:55 "	" 19, 5:55 "	18" " "	7.5	7.3	7.4	"	95.6	
Oct. 16, 8:35 a.m.	Oct. 16, 8:35 a.m.	18" " "	6.8	6.9	6.85	20°c	74.53	
" 16, 9:25 "	" 16, 9:25 "	18" " "	7.	7.	7.	"	76.17	
" 16, 11:00 "	" 16, 11:00 "	18" " "	7.	7.1	7.05	"	76.71	
" 16, 2:30 p.m.	" 16, 2:30 p.m.	18" " "	7.	7.1	7.05	19.5°c	75.97	
" 16, 3:30 "	" 16, 3:30 "	18" " "	7.2	7.2	7.2	"	77.58	
" 16, 4:20 "	" 16, 4:20 "	18" " "	6.8	7.	6.9	"	74.35	
1900	1900							
Jan. 4, 8:45 a.m.	Jan. 4, 9:20 a.m.	18" below surface	11.1	11.1	11.1	1°c	77.78	
" 4, 8:45 "	" 4, 9:20 "	18" " "	11.1	11.1	11.1	"	77.78	
" 4, 8:45 "	" 5, 10:30 "	18" " "	10.9	10.9	10.9	"	76.38	Test of keep-
" 4, 8:45 "	" 5, 10:30 "	18" " "	10.8	10.7	10.75	"	75.33	ing qualities.
" 4, 8:45 "	" 4, 8:45 "	8' " "	11.1	11.	11.05	"	77.44	
" 4, 8:45 "	" 4, 8:45 "	8' " "	11.	11.	11.	"	77.08	
" 4, 8:45 "	" 5, 10:30 "	8' " "	10.6	10.6	10.6	"	74.28	Test of keep-
" 4, 8:45 "	" 5, 10:30 "	8' " "	10.7	10.7	10.7	"	74.98	ing qualities.
" 4, 11:45 "	" 4, "	18" " "	10.9	11.1	11.	"	77.08	
" 4, 11:45 "	" 4,	8' " "	11.2	11.2	11.2	"	78.48	
June 30, 9:00 a.m.	June 30, 9:00 a.m.	18" " "	5.8	5.8	5.8	25°c	69.46	
" 30, 9:35 "	" 30, 9:35 "	18" " "	6.	6.1	6.05	"	72.45	
" 30, 9:35 "	" 30, 9:35 "	2' from bottom	6.2	6.2	6.2	"	74.25	
" 30, 1:45 p.m.	" 30, 1:45 p.m.	18" below surface	6.5	6.6	6.55	26°c	79.95	
" 30, 2:40 "	" 30, 2:40 "	18" " "	6.8	6.8	6.8	"	83.02	
" 30, 2:40 "	" 30, 2:40 "	2' from bottom	6.4	6.6	6.5	"	79.36	
" 30, 3:45 "	" 30, 3:45 "	18" below surface	6.7	Lost	6.7	"	81.80	
" 30, 3:45 "	" 30, 3:45 "	2' from bottom	6.7	6.7	6.7	"	81.80	
" 30, 4:35 "	" 30, 4:35 "	18" below surface	6.8	6.9	6.85	"	83.64	
" 30, 4:35 "	" 30, 4:35 "	2' from bottom	6.8	6.8	6.8	"	83.03	
Oct. 13, 8:30 a.m.	Oct. 13, 8:30 a.m.	18" below surface	7.1	Lost	......	18°c	74.34	
" 13, 9:45 "	" 13, 9:45 "	18" " "	7.1	7.2	7.15	"	74.87	
" 13, 9:45 "	" 13, 9:45 "	18" " "	7.	7.4	7.2	"	75.39	
" 13, 11:10 "	" 13, 11:10 "	18" " "	7.1	6.9	7.	18.5°c	74.00	
" 13, 2:00 p.m.	" 13, 2:00 p.m.	18" " "	7.	7.2	7.1	19°c	75.77	
" 13, 3:10 "	" 13, 3:10 "	18" " "	7.1	7.4	7.25	"	77.37	
" 13, 3:10 "	" 13, 3:10 "	18" " "	7.1	7.1	7.1	"	75.77	
" 13, 4:25 "	" 13, 4:25 "	18" " "	7.	7.	7.	"	74.00	
" 13, 11:10 a.m.	" 15, 2:40 "	18" " "	6.	6.1	6.05	18.5°c	63.95	Kept 51 hours.
" 13, 11:10 "	" 15, 3:00 "	18" " "	6.	6.	6.	"	63.42	" 51 "
" 13, 2:00 p.m.	" 15, 3:50 "	18" " "	5.7	5.7	5.7	19°c	60.83	" 50 "
" 13, 2:00 "	" 15, 4:10 "	18" " "	4.5	5.	4.75	"	50.69	" 50 "
" 13, 4:25 "	" 15, 4:25 "	18" " "	6.	6.1	6.05	"	64.56	" 48 "

ILLINOIS RIVER, WESLEY CITY.

Date of Collection.	Date of Determination.	Depth of Collection.	1	2	Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1899	1899							
July 22, 9:00 a.m.	July 22, 9:00 a.m.	18" below surface	2.	2.4	2.2	28°c	30.38	50 ft. from W. Bank.
" 22, 9:30 "	" 22, 9:30 "	18" " "	7.2	7.3	7.25	"	91.77	Midstream.
" 22, 10:00 "	" 22, 10:00 "	18" " "	7.5	7.2	7.35	"	93.03	
Aug. 18, 7:00 a.m.	Aug. 18, 7:00 a.m.	18" " "	3.6	3.6	3.6	24°c	43.30	East Bank, 50 feet from Midstream.
" 18, 7:00 "	" 18, 7:00 "	18" " "	2.7	2.7	2.7	"	31.72	
" 19, 6:30 p.m.	" 19, 6:30 p.m.	18" " "	4.2	3.5	3.85	27.5°c	48.36	
1900	1900							
Jan. 4, 4:00 p.m.	Jan. 4, 4:00 p.m.	2' below surface	11.1	10.4	10.75	1°c	75.33	East Bank.
" 4, 4:00 "	" 4, 4:00 "	2' " "	10.7	10.7	10.7	"	74.98	
" 4, 4:00 "	" 5, 12:40 "	2' " "	10.5	10.4	10.45	"	73.22	East Bank, kept 21 hours.
" 4, 4:00 "	" 5, 12:40 "	2' " "	10.5	10.4	10.45	"	73.22	

ILLINOIS RIVER, PEKIN.

Date of Collection.	Date of Determination.	Depth of Collection.	1	2	Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1899	1899							
Aug. 18, 10:00 a.m.	Aug. 18, 10:00 a.m.	18" below surface	2.	1.9	1.95	26.5°c	24.04	Midstream.
" 18, 10:00 "	" 18, 10:00 "	18" " "	2.6	2.6	2.6	"	32.06	
" 19, 5:30 p.m.	" 19, 5:30 p.m.	18" " "	6.4	6.4	6.4	30°c	84.21	
" 19, 5:30 "	" 19, 5:30 "	18" " "	6.04	......	......	"	79.74	

ILLINOIS RIVER, LANCASTER LANDING.

Date of Collection.	Date of Determination.	Depth of Collection.	1	2	Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1899	1899							
Aug. 19, 4:20 p.m.	Aug. 19, 4:20 p.m.	18" below surface	9.7	9.8	9.75	30°c	128.29	
" 19, 4:20 "	" 19, 4:20 "	18" " "	9.13	......	......	"	120	Winkler Method

ILLINOIS RIVER, COPPERAS CREEK DAM.

Date of Collection.	Date of Determination.	Depth of Collection.	1	2	Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1899	1899							
Aug. 19, 3:30 p.m.	Aug. 19, 3:30 p.m.	18" below surface	9.5	9.7	9.6	29°c	124.03	

DISSOLVED OXYGEN IN THE WATER OF THE

Illinois River, Havana.

Date of Collection.	Date of Determination.	Depth of Collection.	Mg. per Liter. 1	2	Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1899	1899							
Aug. 18, 3:30 p.m.	Aug. 18, 3:30 p.m.	18" below surface	3.7	3.7	3.7	31°c	49.8	
" 19, 6:00 a.m.	" 19, 6:00 a.m.	18" " "	3.4	3.5	3.45	21°c	40.51	
" 19, 6:00 "	" 19, 6:00 "	18" " "	3.6	3.7	3.65	"	42 89	
" 19, 6:00 "	" 19, 6:00 "	18" " "	3.1	......	......	"	36.42	Winkler Method
" 19, 6:00 "	" 19, 6:00 "	18" " "	3.01	......	......	"	35.37	" "

Illinois River, Grafton.

Date of Collection.	Date of Determination.	Depth of Collection.	Mg. per Liter. 1	2	Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1899	1899							
Apr. 29, 10:30 a.m.	Apr. 29, 10:30 a.m.	1' below surface	11.2	11.3	11.25	22°c	127.27	
" 29, 2:15 p.m.	" 29, 2:15 p.m.	1' " "	11.4	11.4	11.4	"	128.95	Midchannel.
" 29, 3:15 "	" 29, 3:15 "	1' " "	11.1	11.1	11.1	"	125.56	
June 22, 9:00 p.m.	June 23, a. m.	18" " "	5.7	5.5	5.6	27°c	69.73	
" 22, 9:00 "	" 23, a. m.	18" " "	5.4	5.6	5.5	"	68 19	
" 23, 9:00 a.m.	" 23, 9:00 a.m.	18" " "	5.1	5 5	5.3	28.5°c	67.77	
" 23, 4:30 p.m.	" 23, 4:30 p.m.	18" " "	5.7	5.8	5.75	28°c	71.78	
" 23, 4:30 "	" 23, 4:30 "	18' " "	5.7	5.6	5.65	"	71.52	
" 24, 4:30 a.m.	" 21, 4:30 a.m.	18" " "	5.5	5.55	5.52	"	69.87	
" 24, 1:45 p.m.	" 21, 1:45 p.m.	18" " "	6.	6.	6.	"	75.95	
July 27, 3:30 p.m.	July 27, 3:30 p.m.	18" " "	8.2	8.3	8.25	32°c	113.01	
" 27, 3:30 "	" 27, 3:30 "	18" " "	8.21	......	.....	"	112.46	Winkler's
" 27, 3:30 "	" 27, 3:30 "	18" " "	8.25	.....	......	"	113.01	Method.
" 27, 4:00 "	" 27, 4:00 "	11' " "	6.25	6.25	6.25	31°c	83.89	
" 27, 4:30 "	" 27, 4:30 "	4" " "	9.6	9.7	9 65	31°c	137.85	
" 27, 5:00 "	" 27, 5:00 "	11' " "	5.98	......	......	31°c	80 25	Winkler's
" 27, 5:00 "	" 27, 5:00 "	11' " "	5.86	......	......	"	78.66	Method.
" 27, 5:45 "	" 27, 5:45 "	18" " "	7.7	7.8	7.75	32°c	106.16	
" 27, 8:30 "	" 27, 8:30 "	18" " "	6 4	......	......	"	87.67	
" 27, 8:30 "	" 27, 8:30 "	18" " "	6.63	......	......	"	90.82	
" 28, 6:20 a.m.	" 28, 6:20 a.m.	18" " "	6.	6.	6.	30°c	78.94	
" 28, 6:30 "	" 28, 6:30 "	18" " "	5.91	......	......	"	77.76	
" 28, 6:30 "	" 28, 6:30 "	18" " "	5.96	......	......	"	78.42	
" 28, 11:30 "	" 28, 11:30 "	18" " "	6.3	......	......	29°c	81.39	Winkler's
" 28, 11:30 "	" 28, 11:30 "	18" " "	6.29	......	......	"	81.27	Method.
" 28, 11:30 "	" 28, 11:30 "	18" from bottom	5.32	......	......	28°c	67.34	
" 28, 11:30 "	" 28, 11:30 "	18" " "	5.32	......	......	"	67.34	
" 28, 3:30 p.m.	" 28, 3:30 p.m.	18" below surface	7.15	7.2	7.17	30°c	94.34	
" 28, 3:45 "	" 28, 3:45 "	18" from bottom	6.35	6.35	6.35	"	83.55	
" 28, 4:20 "	" 28, 4:20 "	4" below surface	9.35	......	......	"	123.03	
" 28, 4:30 "	" 28, 4:30 "	2" " "	8.18	......	......	"	107.63	
" 28, 4:30 "	" 28, 4:30 "	2" " "	8.18	......	......	"	107.63	
Aug. 25, 7:50 a.m.	Aug. 25, 7:50 a.m.	18" " "	5.8	5.9	5.85	28°c	74.05	
" 25, 11:40 p.m.	" 25, 11:40 p.m.	18" " "	7.	7.1	7.05	31°c	94.63	
" 25, 3:40 "	" 25, 3:40 "	18" " "	7.	6.8	6.9	"	93.24	
" 25, 8:35 a.m.	" 25, 8:35 a.m.	2' from bottom	5.4	5.4	5.4	28°c	68.35	
" 25, 12:15 p.m.	" 25, 12:15 p.m.	2' " "	5.2	5.2	5.2	29°c	67.18	
" 25, 4:00 "	" 25, 4:00 "	2' " "	4.9	4.9	4.9	30°c	64.47	
Dec. 28, 1:30 p.m.	Dec. 29, 5:00 p.m.	18" below surface	12.9	13.5	13.2	0°c	89.79	Center Channel.
" 28, 1:30 "	" 30, a.m.	18" " "	12.7	12.4	12.55	"	85.37	Opp. side "
" 28, 1:30 "	" 30, a.m.	18" " "	13.1	13.1	13.1	"	89.11	⅓ dist. fr. main shore.
1900	1900							
Jan. 4, 11:00 a.m.	Jan. 5, 12:00 m.	18" below surface	11.7	11.5	11.6	0°c	78.90	
" 4, 11:00 "	" 6, 2:20 p.m.	18" " "	11.	11.1	11.05	"	75.51	
" 4, 11:00 "	" 6, 2:20 "	18" " "	10.9	10.8	10.85	"	73.81	
" 4, 11:00 "	" 6, 11:00 a.m.	2' from bottom	10.9	10.9	10.9	"	74.15	
" 4, 11:00 "	" 6, 11:00 "	2' " "	11.1	11.1	11.1	"	75.51	
" 17, 11:00 "	" 18, 12.00 m.	18" below surface	12.	11.8	11.9	3°c	88.14	
" 17, 11:00 "	" 18, 12:00 m.	18" " "	12.	Lost	......	"	88 88	
" 17, 11:00 "	" 18, 2:00 p.m.	2' from bottom	12.	12.	12.	"	88.88	
" 17, 11:00 "	" 18, 2:00 "	2' " "	12.1	12.	12.05	"	89.26	
" 24, 11:30 "	" 25, 10:30 a.m.	18" below surface	10.8	10.8	10.8	4°c	82.13	
" 24, 11:30 "	" 25, 10:30 "	18" " "	10.9	10 9	10.9	"	82.88	
" 24, 11:30 "	" 25, 10:30 "	2' from bottom	10.8	10.8	10.8	"	82.13	
" 24, 11:30 "	" 26, 10:30 "	2' " "	10.9	10.9	10.9	"	82.88	
" 28, 11:00 "	" 31, 10:25 "	18" below surface	11.3	11.3	11.3	0°c	76.87	
" 28, 11:00 "	" 31, 10:25 "	2' from bottom	11.9	11.7	11.8	"	80.27	
Feb. 7, 11:30 a.m.	Feb. 9, 8:50 a.m.	18" below surface	12.8	12.8	12.8	"	87.07	
" 7, 11:30 "	" 9, 8:50 "	18" " "	12.9	12.8	12.85	"	87.41	
" 7, 11:30 "	" 9, 9:20 "	2' from bottom	12.9	12.9	12.9	"	87.75	
" 7, 11:30 "	" 10, 8:15 "	2' " "	12.5	12.4	12.45	"	84.69	
" 12, 1:30 p.m.	" 14, 8:45 "	18" below surface	11.7	11.7	11.7	"	79.59	
" 12, 1:30 "	" 14, 8:45 "	18" " "	11.5	11.5	11.5	"	78.23	
" 12, 1:30 "	" 14, 9:45 "	2' from bottom	11.6	11.5	11.55	"	78.57	
" 12, 1:30 "	" 15, 9:45 "	2' " "	11.1	11.1	11.1	"	75.51	
" 14, 11:30 a.m.	" 16, 8:30 "	18" below surface	11.8	11.8	11.8	"	80.27	
" 14, 11:30 "	" 16, 8:30 "	18" " "	11.8	11.8	11.8	"	80.27	
" 14, 11:30 "	" 16, 9:20 "	2' from bottom	11.7	11.7	11.7	"	79.59	
" 14, 11:30 "	" 17, 8:25 "	2' " "	11.5	11.5	11.5	"	78.23	
" 19, 11:00 "	" 20, 5:00 p.m.	18" below surface	10.9	10.9	10.9	"	82.88	
" 19, 11:00 "	" 21, 8:15 a.m.	18" " "	10.6	10.6	10.6	"	72.11	
" 19, 11:00 "	" 21, 8:50 "	2' from bottom	9.9	9.9	9.9	"	67.31	
" 19, 11:00 "	" 21, 8:50 "	2' " "	10 1	......	......	"	70.74	
" 21, 11:00 "	" 23, 10:40 "	2' " "	9 9	9.7	9.8	"	66 66	
" 21, 11:00 "	" 23, 10:40 "	2' " "	10.	9.9	9.95	"	67.69	

Illinois River, Grafton—Continued.

Date of Collection.	Date of Determination.	Depth of Collection.	Mg. per Liter. 1	2	Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1900	1900							
Feb. 22, 10:30 p.m.	Feb. 26, 11:15 p.m.	18" below surface	8.6	8.6	8.6	0°c	58.5	
" 22, 10:30 "	" 26, 11:15 "	18" " "	8.7	8.7	8.7	"	59.15	
" 22, 10:30 "	" 26, 11:40 "	2' from bottom	7.9	8.	7.95	"	54.08	Test of keeping qualities.
" 22, 10:30 "	" 27, 8:15 "	2' " "	7.9	8.2	8.05	"	54.76	
Mar. 2, 1:30 p.m.	Mar. 3, 5:15 p.m.	18" below surface	11.1	11.1	11.1	"	75.51	
" 2, 1:30 "	" 5, 8:30 a.m.	18" " "	10.9	10.9	10.9	"	74.15	
" 2, 1:30 "	" 5, 9:35 "	2' from bottom	10.9	10.8	10.85	"	73.81	
" 2, 1:30 "	" 5, 9:35 "	2' " "	10.4	10.4	10.4	"	70.75	
" 5, 2:00 "	" 6, 12:45 p.m.	18" below surface	11.2	11.3	11.25	"	76.53	
" 5, 2:00 "	" 6, 12:45 "	18" " "	11.2	11.2	11.2	"	76.19	
" 5, 2:00 "	" 6, 1:10 "	2' from bottom	11.3	11.2	11.25	"	76.53	Test of keeping qualities.
" 5, 2:00 "	" 7, 8:25 a.m.	2' " "	11.1	11.1	11.1	"	75.51	
" 7, 11:00 a.m.	" 8, 4:35 p.m.	18" below surface	11.1	Lost	.....	"	75.51	
" 7, 11:00 "	" 8, 5:10 "	18" " "	11.7	11.7	11.7	"	79.59	
" 7, 11:00 "	" 9, 8:15 a.m.	2' from bottom	11.2	11.3	11.25	"	76.53	
" 7, 11:00 "	" 9, 8:15 "	2' " "	11.5	11.5	11.5	"	78.23	
" 9, 11:30 "	" 10, 5:00 p.m.	18" below surface	11.7	11.8	11.75	"	79.93	
" 9, 11:30 "	" 10, 5:30 "	18" " "	11.7	11.7	11.7	"	79.59	
" 9, 11:30 "	" 12, 8:25 a.m.	2' from bottom	10.1	10.1	10.1	"	68.71	
" 9, 11:30 "	" 12, 8:25 "	2' " "	10.3	10.3	10.3	"	70.07	
" 12, 11:30 "	" 13, 5:00 p.m.	18" below surface	10.6	10.6	10.6	2°c	76.42	Test of keeping qualities.
" 12, 11:30 "	" 14, 8:00 a.m.	18" " "	10.3	10.2	10.25	"	73.90	
" 12, 11:30 "	" 13, 5:20 p.m.	2' from bottom	10.9	10.8	10.85	"	77.50	Test of keeping qualities.
" 12, 11:30 "	" 14, 8:35 a.m.	2' " "	10.5	10.5	10.5	"	75.70	
" 14, 10:30 "	" 15, 4:30 p.m.	18" below surface	10.3	10.3	10.3	4°c	78.33	Test of keeping qualities.
" 14, 10:30 "	" 16, 8:00 a.m.	18" " "	10.3	10.3	10.3	"	78.33	
" 19, 1:00 p.m.	" 20, 4:15 p.m.	18" " "	11.1	11.1	11.1	0°c	75.51	
" 19, 1:00 "	" 21, 8:15 a.m.	18" " "	11.	11.1	11.05	"	75.17	
" 19, 1:00 "	" 20, 4:45 p.m.	2' from bottom	11.1	11.1	11.1	"	75.51	
" 19, 1:00 "	" 21, 8:40 a.m.	2' " "	10.9	11.1	11.	"	74.83	
" 21, 10:30 a.m.	" 22, 4:30 p.m.	18" below surface	11.1	11.1	11.1	3°c	82.22	
" 21, 10:30 "	" 23, 8:30 a.m.	18" " "	10.9	10.9	10.9	"	80.74	
" 21, 10:30 "	" 22, 5:15 p.m.	2' from bottom	11.	11.2	11.1	"	82.22	
" 21, 10:30 "	" 23, 9:00 a.m.	2' " "	11.	11.	11.	"	81.48	
" 23, 11:00 "	" 24, 4:50 p.m.	18" below surface	11.2	11.2	11.2	"	82.96	
" 23, 11:00 "	" 26, 8:45 a.m.	18" " "	10.3	10.3	10.3	"	76.29	
" 23, 11:00 "	" 26, 8:20 "	2' from bottom	10.1	10.5	10.3	"	76.29	
" 23, 11:00 "	" 26, 8:20 "	2' " "	10.3	10.3	10.3	"	76.29	
" 26, 11:30 "	" 28, 10:20 "	18" below surface	10.	10.1	10.05	4°c	76.42	
" 26, 11:30 "	" 28, 10:20 "	18" " "	10.	10.	10.	"	76 04	
" 26, 11:30 "	" 28, 10:50 "	2' from bottom	10.2	10.2	10.2	"	77.56	
" 26, 11:30 "	" 29, 9:00 "	2' " "	9.9	10.	9.95	"	75.66	
" 28, 11:30 "	" 29, 5:00 p.m.	18" below surface	9.8	9.9	9.85	3°c	72.96	
" 28, 11:30 "	" 30, 8:20 a.m.	18" " "	9.6	9.5	9.55	"	70.74	
" 28, 11:30 "	" 30, 8:50 "	2' from bottom	10.2	10.2	10.2	"	75.55	
" 28, 11:30 "	" 30, 8:50 "	2' " "	10.	10.	10.	"	74.07	
" 30, 11:30 "	April 2, 10:25 a.m.	18" below surface	8.4	8.4	8.4	"	62.22	
" 30, 11:30 "	" 2, 10:25 "	18" " "	8.7	8.7	8.7	"	64.44	
" 30, 11:30 "	" 2, 11:25 "	2' from bottom	9.5	9.4	9.45	"	70.00	
April 2, 11:30 a.m.	" 3, 5:00 p.m.	18" below surface	10.	9.9	9.95	4°c	75.66	
" 2, 11:30 "	" 4, 9:15 a.m.	18" " "	10.2	10.2	10.2	"	77.56	
" 2, 11:30 "	" 4, 8:50 "	2' from bottom	10.	9.9	9.95	"	75 66	
" 2, 11:30 "	" 4, 8:50 "	2' " "	10.	10.	10.	"	76.04	
" 4, 11:00 "	" 5, 4:50 p.m.	18" below surface	9.9	10.	9.95	"	75.66	
" 4, 11:00 "	" 6, 8:50 a.m.	18" " "	9.9	9.9	9.9	"	75.29	
" 4, 11:00 "	" 6, 8:20 "	2' from bottom	9.7	9.7	9.7	"	73.76	
" 4, 11:00 "	" 6, 8:20 "	2' " "	10.	10.	10.	"	76.04	
" 6, 11:30 "	" 7, 4:50 p.m.	18" below surface	9.5	9.5	9.5	5°c	74.10	
" 6, 11:30 "	" 9, 8:00 a.m.	18" " "	8.7	8.7	8.7	"	67.86	
" 6, 11:30 "	" 7, 5:25 p.m.	2' from bottom	9.3	9.3	9.3	"	72.54	
" 6, 11:30 "	" 9, 8:00 a.m.	2' " "	8.6	8.6	8.6	"	67.08	
" 9, 11:00 "	" 10, 5:00 p.m.	18" below surface	8.8	8.8	8.8	11°c	79.56	
" 9, 11:00 "	" 11, 8:00 a.m.	18" " "	8.7	8.7	8.7	"	78.66	
" 9, 11:00 "	" 11, 8:30 "	2' from bottom	8.8	8.7	8.75	"	79.11	
" 9, 11:00 "	" 11, 8:30 "	2' " "	8.7	8.8	8.75	"	79.11	
" 11, 11:00 "	" 12, 4:50 p.m.	18" below surface	9.4	9.4	9.4	9°c	81.17	
" 11, 11:00 "	" 13, 8:10 a.m.	18" " "	9.3	9.3	9.3	"	80.31	
" 11, 11:00 "	" 12, 5:15 p.m.	2' from bottom	10.	9.9	9.95	"	85.91	
" 11, 11:00 "	" 13, 8:10 a.m.	2' " "	9.9	9.9	9.9	"	85.49	
" 13, 11:30 "	" 14, 4:40 p.m.	18" below surface	10.1	10.1	10.1	"	87.22	
" 13, 11:30 "	" 14, 5:10 "	18" " "	10.2	10.3	10.25	"	88.51	
" 13, 11:30 "	" 16, 8:20 a.m.	2' from bottom	9.6	9.6	9.6	"	82.90	
" 13, 11:30 "	" 16, 8:50 "	2' " "	10.2	10.1	10.15	"	87.65	
" 16, 11:30 "	" 17, 5:00 p.m.	18" below surface	9.5	9.6	9.55	10°c	84.43	
" 16, 11:30 "	" 18, 8:25 a.m.	2' from bottom	9.9	9.9	9.9	"	87.53	
" 16, 11:30 "	" 18, 8:25 "	2' " "	9.9	9.7	9.8	"	86.64	
" 20, 11:30 "	" 21, 10:45 "	18" below surface	9.	8.9	8.95	11°c	80.92	
" 20, 11:30 "	" 21, 10:45 "	18" " "	8.9	8.9	8.9	"	80.47	
" 20, 11:30 "	" 21, 11:15 "	2' from bottom	8.8	8.7	8.75	"	79.11	
" 20, 11:30 "	" 21, 11:15 "	2' " "	8.6	8.6	8.6	"	77.74	
" 23, 11:30 "	" 24, 5:00 p.m.	18" below surface	8.	8.3	8.15	14°c	71.91	
" 23, 11:30 "	" 25, 8:35 a.m.	18" " "	8.2	8.1	8.15	"	71.91	
" 23, 11:30 "	" 25, 8:00 "	2' from bottom	7.6	7.6	7.6	"	73.36	
" 23, 11:30 "	" 25, 8:00 "	2' " "	7.3	7.2	7.25	"	69.98	
May 2, 11:30 a.m.	May 3, 11:00 a.m.	18" below surface	8.2	8.1	8.15	20°c	88.68	
" 2, 11:30 "	" 3, 11:00 "	18" " "	8.2	8.2	8.2	"	89.23	

ILLINOIS RIVER. GRAFTON—Concluded.

Date of Collection.	Date of Determination.	Depth of Collection.	Mg. per Liter. 1	2	Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1900	1900							
May 2, 11:30 a.m.	May 3, 11:25 a.m.	2' from bottom	8.8	8.8	8.8	20°c	95.75	
" 2, 11:30 "	" 4, 10:00 "	2' " "	8.2	8.2	8.2	"	89.23	
" 9, 11:00 "	" 10, 4:45 p.m.	18" below surface	6.7	6.8	6.75	19°c	72.03	
" 9, 11:00 "	" 11, 8:10 a.m.	18" " "	6.3	6.3	6.3	"	67.23	
" 9, 11:00 "	" 10, 5:10 p.m.	2' from bottom	6.9	6.9	6.9	"	73.64	
" 9, 11:00 "	" 11, 8:35 a.m.	2' " "	6.5	6.5	6.5	"	69.37	
" 16, 11:30 "	" 18, p.m.	18" below surface	3.7	3.8	3.75	25°c	44.91	
" 16, 11:30 "	" 18, p.m.	18" " "	3.8	3.7	3.75	"	44.91	
" 16, 11:30 "	" 18, p.m.	2' from bottom	3.7	3.5	3.6	"	43.11	
" 16, 11:30 "	" 18, p.m.	2' " "	3.8	3.8	3.8	"	45.51	
" 30, 11:30 "	" 31, 1:50 p.m.	18" below surface	5.1	5.1	5.1	"	61.08	
" 30, 11:30 "	" 31, 1:50 "	18" " "	5.1	5.1	5.1	"	61.08	
" 30, 11:30 "	" 31, 2:50 "	2' from bottom	5.2	5.3	5.25	"	62.87	
" 30, 11:30 "	June 1, 10:15 a.m.	2' " "	5.1	5.1	5.1	"	61.08	
June 6, 11:30 "	" 7, 4:30 p.m.	18" below surface	4.4	4.4	4.4	"	52.69	
" 6, 11:30 "	" 7, 4:30 "	18" " "	5.2	5.2	5.2	"	62.27	
" 13, 11:30 "	" 14, 4:30 "	18" " "	5.2	5.2	5.2	27°c	64.75	
" 13, 11:30 "	" 14, 4:30 "	18" " "	5.8	5.7	5.75	"	71.61	
" 13, 11:30 "	" 15, 9:00 a.m.	2' from bottom	4.7	4.6	4.65	"	57.97	
" 27, 11:30 "	" 28, 10:00 "	18" below surface	5.3	5.5	5.4	"	67.24	
" 27, 11:30 "	" 28, 10:00 "	18" " "	5.4	5.4	5.4	"	67.24	
" 27, 11:30 "	" 28, 1:30 p.m.	2' from bottom	5.4	5.5	5.45	"	67.87	
July 7, 5:00 p.m.	July 7, 5:00 p.m.	18" below surface	7.3	7.2	7.25	30°c	95.4	
" 7, 5:00 "	" 7, 5:00 "	2' from bottom	7.2	7.2	7.2	"	94.7	
" 7, 5:45 "	" 7, 5:45 "	18" below surface	7.	7.	7.	"	92.8	

MISSISSIPPI RIVER. GRAFTON.

1899	1899							
April 29, 4:30 p.m.	April 29, 4:30 p.m.	18" below surface	8.9	8.9	8.9	18°c	93.19	
June 24, 3:00 p.m.	June 24, 3:00 p.m.	18" " "	7.	6.8	6.9	27°c	85.9	
July 27, 7:30 p.m.	July 27, 7:30 p.m.	18" " "	8.6	8.8	8.7	31°c	116.7	
" 28, 9:15 a.m.	" 28, 9:15 a.m.	18" " "	7.09	......	......	29°c	91.7	Winkler.
" 28, 9:15 "	" 28, 9:15 "	18" " "	7.1	......	......	"	91 7	
" 28, 2:30 p.m.	" 28, 2:30 p.m.	18" " "	8.9	8.7	8.8	30°c	115.8	
Aug. 25, 10:08 a.m.	Aug. 25, 10:08 a.m.	18" " "	7.3	7.4	7.35	27°c	91.53	
" 25, 2:05 p.m.	" 25, 2:05 p.m.	18" " "	8.	8.1	8.05	28°c	101.89	
" 25, 2:30 "	" 25, 2:30 "	18" " "	8.1	8.1	8.1	"	102.53	
Dec. 28, 1:30 p.m.	Dec. 29, 5:00 "	18" " "	13.7	13.7	13.7	0°c	93.19	Center Channel.
" 28, 1:30 "	" 30, 9:00 a.m.	18" " "	13.1	13.	13.05	"	88 77	Near Dyke.
" 28, 1:30 "	" 30, 9:00 "	18" " "	14.1	14.	14.05	"	95.58	Mo. Shore.
1900	1900							
Jan. 4, 1:30 p.m.	Jan. 5, 12:00 m.	18" below surface	15.5	14.1	14.8	"	100.65	
" 4, 1:30 "	" 5, 12:00 m.	18" " "	16.	16.	16.	"	108.84	
" 4, 1:30 "	" 6, 8:30 a.m.	18" " "	15.6	15.8	15.7	"	106.8	
" 4, 1:30 "	" 6, 10:30 "	2' from bottom	15.4	15.4	15.4	"	104 76	
" 4, 1:30 "	" 6, 10:30 "	2' " "	14.6	14.8	14.7	"	100.00	
" 17, 1:30 "	" 18, 11:00 "	18" below surface	14 6	14.4	14.5	3°c	107.41	
" 17, 1:30 "	" 18, 11:00 "	18' " "	14.6	14.4	14.5	"	107.41	
" 17, 1:30 "	" 18, 11:15 "	2' from bottom	14.6	14.1	14.35	"	106.29	
" 17, 1:30 "	" 18, 11:15 "	2' " "	13.9	14.	13.95	"	103.33	
" 21, 2:00 "	" 25, 11:00 "	18" below surface	12.7	12.9	12.8	4°c	97.33	
" 24, 2:00 "	" 25, 11:00 "	18" " "	12 6	12.5	12.55	"	95.44	
" 24, 2:00 "	" 25, 11:30 "	2' from bottom	12.7	12.6	12.65	"	96.19	
" 24, 2:00 "	" 26, 10:30 "	2' " "	12.8	12.7	12.75	"	96.96	
" 28, 12:15 "	" 31, 11:30 "	18" below surface	11.9	11.7	11.8	0°c	80.27	
" 28, 12:15 "	" 31, 11:30 "	18" " "	12.	11.9	11.95	"	81.29	
" 28, 12:15 "	" 31, 11:30 "	2' from bottom	12.5	12.5	12.5	"	85.03	
" 28, 12:15 "	Feb. 1, 12:15 p.m.	2' " "	12.5	12.4	12.45	"	84.69	
Feb. 7, 2:30 p.m.	" 9, 8:20 a.m.	18" below surface	10.6	10.6	10.6	"	72.11	
" 7, 2:30 "	" 9, 8:20 "	18" " "	10.3	10.4	10.35	"	70.41	
" 7, 2:30 "	" 9, 9:20 "	2' from bottom	9.4	9.6	9.5	"	64.62	
" 7, 2:30 "	" 10, 8:15 "	2' " "	8.2	8.2	8.2	"	55.78	
" 12, 2:30 "	" 14, 9:15 "	18" below surface	13.	13.1	13.05	"	88.77	
" 12, 2:30 "	" 14, 9:15 "	18" " "	12.8	12.7	12.75	"	86.73	
" 12, 2:30 "	" 14, 9:45 "	2' from bottom	12.9	12.8	12.85	"	87.41	
" 12, 2:30 "	" 15, 9:45 "	2 " "	12.8	12.7	12 75	"	86.73	
" 14, 1:00 "	" 16, 8:50 "	18" below surface	13.	13.2	13.1	"	89.12	
" 14, 1:00 "	" 16, 8:50 "	2' from bottom	12.8	12.9	12.85	"	87.41	
" 14, 1:00 "	" 17, 8:25 "	2' " "	13 3	13.3	13.3	"	90.48	
" 19, 2:00 "	" 20, 5:00 p.m.	18" below surface	11.6	11.6	11.6	"	78 91	
" 19, 2:00 "	" 21, 8:15 a.m.	2' from bottom	11.4	11.3	11.35	"	70.41	
" 21, 1:30 "	" 23, 11:10 "	18" below surface	10.8	10.9	10.85	"	73 81	
" 21, 1:30 "	" 23, 11:10 "	2' from bottom	10.9	10.9	10.9	"	74.15	
" 22, 11:30 a.m.	" 26, 10:35 "	18" below surface	9.3	9.4	9.35	"	63.60	
" 22, 11:30 "	" 26, 10:35 "	2' from bottom	9 2	9.2	9 2	"	62.58	
Mar. 2, 11:00 a.m.	Mar. 3, 5:15 p.m.	18" below surface	12.5	12.5	12.5	"	85.03	
" 2, 11:00 "	" 5, 8:30 a.m.	18" " "	12.5	12.5	12.5	"	85.03	
" 2, 11:00 "	" 5, 9:10 "	2' from bottom	12.6	12.6	12.6	"	85.71	
" 2, 11:00 "	" 5, 9:10 "	2' " "	12.5	12.6	12.55	"	85.37	
" 5, 11:30 "	" 6, 11:30 "	18" below surface	12.3	12.5	12.4	"	84.35	
" 5, 11:30 "	" 6, 11:30 "	18" " "	12.3	12.3	12.3	"	83.67	
" 5, 11:30 "	" 6, 1:10 p.m.	2' from bottom	12 4	12.4	12.4	"	84.35	
" 5, 11:30 "	" 7, 8:25 a.m.	2' " "	12.4	12.4	12.4	"	84.35	
" 7, 2:00 p.m.	" 8, 4:35 p.m.	18" below surface	12.6	12.6	12.6	"	85.71	
" 7, 2:00 "	" 8, 4:35 "	18" " "	12.6	12.5	12.55	"	85.37	

MISSISSIPPI RIVER, GRAFTON—Continued.

Date of Collection.	Date of Determination.	Depth of Collection.	Mg. per Liter. 1	2	Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1900	1900							
Mar. 7, 2:00 p.m.	Mar. 9, 8:45 a.m.	2' from bottom	13.	13.	13.	0°c	88.43	
" 7, 2:00 "	" 9, 8:45 "	2' " "	13.	12.9	12.95	"	88.09	
" 9, 1:00 "	" 10, 5:00 p.m.	18" below surface	12.7	12.7	12.7	"	86.39	
" 9, 1:00 "	" 12, 8:50 a.m.	18" " "	12.	12.1	12.05	"	81.97	
" 9, 1:00 "	" 10, 5:30 p.m.	2' from bottom	12.6	12.6	12.6	"	85.71	
" 9, 1:00 "	" 12, 8:30 a.m.	2' " "	12.	12.	12.	"	81.63	
" 12, 1:00 "	" 13, 5:00 p.m.	18" below surface	11.7	11.8	11.75	2°c	84.71	
" 12, 1:00 "	" 14, 8:00 a.m.	18" " "	11.2	11.3	11.25	"	81.11	
" 12, 1:00 "	" 13, 5:20 p.m.	2' from bottom	12.	12.	12.	"	86.52	
" 12, 1:00 "	" 14, 8:35 a.m.	2' " "	11.7	11.7	11.7	"	84.35	
" 14, 11:30 "	" 15, 5:30 p.m.	18" below surface	10.5	10.5	10.5	4°c	79.84	
" 14, 11:30 "	" 16, 8:00 a.m.	18" " "	10.1	10.	10.05	"	76.42	
" 14, 11:30 "	" 16, 9:00 "	2' from bottom	10.2	10.3	10.25	"	77.94	
" 14, 11:30 "	" 16, 9:00 "	2' " "	10.1	10.	10.05	"	76.42	
" 19, 2:00 "	" 20, 4:15 p.m.	18" below surface	10.5	10.7	10.6	0°c	72.11	
" 19, 2:00 "	" 21, 8:15 a.m.	18" " "	10.3	10.6	10.45	"	71.09	
" 19, 2:00 "	" 20, 4:45 p.m.	2' from bottom	10.5	10.7	10.6	"	72.11	
" 19, 2:00 "	" 21, 8:40 a.m.	2' " "	10.7	11.	10.85	"	73.81	
" 21, 11:30 a.m.	" 22, 4:30 p.m.	18" below surface	11.8	12.	11.9	3°c	88.14	
" 21, 11:30 "	" 23, 8:30 a.m.	18" " "	10.7	11.1	10.9	"	80.74	
" 21, 11:30 "	" 22, 5:15 p.m.	2' from bottom	11.8	11.8	11.8	"	87.41	
" 23, 1:00 p.m.	" 24, 4:50 "	18" below surface	10.4	10.6	10.5	"	77.77	
" 23, 1:00 "	" 26, 8:45 a.m.	2' from bottom	9.4	9.5	9.45	"	70.00	
" 26, 1:00 "	" 28, 10:50 "	18" below surface	10.6	10.6	10.6	4°c	80.61	
" 28, 1:00 "	" 28, 10:50 "	2' from bottom	10.9	10.8	10.85	"	82.51	
" 26, 1:00 "	" 29, 9:00 "	2' " "	10.2	10.2	10.2	"	77.56	
" 28, 1:00 "	" 29, 5:00 p.m.	18" below surface	10.9	10.9	10.9	"	82.89	
" 28, 1:00 "	" 30, 8:20 a.m.	18" " "	10.7	10.6	10.65	"	80.98	
" 28, 1:00 "	" 30, 9:25 "	2' from bottom	11.1	11.	11.05	"	84.03	
" 28, 1:00 "	" 30, 9:25 "	2' " "	10.8	10.8	10.8	"	82.13	
" 30, 1:00 "	April 2, 11:55 a.m.	18" below surface	10.6	10.6	10.6	"	80.61	
" 30, 1:00 "	" 2, 11:55 "	2' from bottom	10.9	10.9	10.9	"	82.89	
April 2, 1:00 p.m.	" 3, 5:00 p.m.	18" below surface	12.2	12.2	12.2	5°c	95.16	
" 2, 1:00 "	" 4, 8:20 a.m.	2' from bottom	11.5	11.5	11.5	"	89.70	
" 2, 1:00 "	" 4, 8:20 "	2' " "	11.1	11.	11.05	"	86.19	
" 4, 1:00 "	" 5, 4:50 p.m.	18" below surface	10.4	10.4	10.4	"	81.12	
" 4, 1:00 "	" 6, 8:50 a.m.	2' from bottom	10.4	10.3	10.35	"	80.73	
" 6, 1:00 "	" 7, 4:50 p.m.	18" below surface	9.4	9.5	9.45	4°c	71.86	
" 6, 1:00 "	" 9, 8:30 a.m.	18" " "	8.2	8.2	8.2	"	62.35	
" 6, 1:00 "	" 7, 5:25 p.m.	2' from bottom	10.5	10.4	10.45	"	79.46	
" 9, 1:00 "	" 10, 5:00 "	18" below surface	9.5	9.5	9.5	9°c	82.04	
" 9, 1:00 "	" 11, 8:00 a.m.	18" " "	9.4	9.5	9.45	"	81.61	
" 9, 1:00 "	" 11, 9:10 "	2' from bottom	9.7	9.7	9.7	"	83.76	
" 9, 1:00 "	" 11, 9:10 "	2' " "	9.9	9.9	9.9	"	85.49	
" 11, 1:00 "	" 12, 4:50 p.m.	18" below surface	9.9	9.8	9.85	8°c	82.98	
" 11, 1:00 "	" 12, 5:15 "	2' from bottom	9.3	Lost	......	"	78.35	
" 13, 1:00 "	" 14, 4:40 "	18" below surface	10.4	10.4	10.4	"	87.61	
" 13, 1:00 "	" 14, 5:10 "	18" " "	10.5	10.5	10.5	"	88.46	
" 13, 1:00 "	" 16, 8:20 a.m.	2' from bottom	10.4	10.4	10.4	"	87.61	
" 13, 1:00 "	" 16, 8:50 "	2' " "	9.8	9.8	9.8	"	82.56	
" 16, 1:00 "	" 17, 5:00 p.m.	18" below surface	10.5	10.5	10.5	11°c	94.93	
" 16, 1:00 "	" 18, 9:20 a.m.	18" " "	9.8	9.7	9.75	"	88.15	
" 16, 1:00 "	" 18, 9:00 "	2' from bottom	10.	10.	10.	"	90.41	
" 16, 1:00 "	" 18, 9:00 "	2' " "	10.3	10.3	10.3	"	93.13	
" 20, 1:00 "	" 21, 10:00 "	18" below surface	9.6	9.7	9.65	"	87.25	
" 20, 1:00 "	" 21, 10:00 "	18" " "	9.7	9.7	9.7	"	87.70	
" 20, 1:00 "	" 21, 11:15 "	2' from bottom	8.9	8.9	8.9	"	80.47	
" 23, 1:00 "	" 24, 5:00 p.m.	18" below surface	8.6	8.6	8.6	14°c	83.59	
" 23, 1:00 "	" 25, 8:00 a.m.	18" " "	7.7	7.7	7.7	"	74.32	
" 23, 1:00 "	" 25, 9:10 "	2' from bottom	8.6	8.6	8.6	"	83.01	
" 23, 1:00 "	" 25, 9:10 "	2' " "	8.3	8.4	8.35	"	82.53	
May 2, 1:00 p.m.	May 3, 10:30 a.m.	18" below surface	8.5	8.5	8.5	19°c	90.71	
" 2, 1:00 "	" 3, 10:30 "	18" " "	8.2	8.3	8.25	"	88.04	
" 2, 1:00 "	" 3, 11:25 "	2' from bottom	8.9	8.9	8.9	"	94.98	
" 2, 1:00 "	" 4, 10:00 "	2' " "	8.1	8.2	8.15	"	86.98	
" 9, 1:00 "	" 10, 4:45 p.m.	18" below surface	7.3	7.3	7.3	18°c	76.44	
" 9, 1:00 "	" 11, 8:10 a.m.	18" " "	7.2	7.2	7.2	"	75.39	
" 9, 1:00 "	" 10, 5:10 p.m.	2' from bottom	7.9	7.9	7.9	"	82.72	
" 9, 1:00 "	" 11, 8:35 a.m.	2' " "	7.5	7.5	7.5	"	78.53	
" 16, 1:00 "	" 18, p.m.	18" below surface	6.	6.	6.	23°c	69.20	
" 16, 1:00 "	" 18, p.m.	2' from bottom	6.4	6.3	6.35	"	73.21	
" 30, 1:00 "	" 31, 2:30 p.m.	18" below surface	7.2	7.1	7.15	24°c	84.02	
" 30, 1:00 "	" 31, 2:30 "	18" " "	7.1	7.1	7.1	"	83.43	
" 30, 1:00 "	June 1, 10:15 a.m.	2' from bottom	7.	7.	7.	"	82.25	
June 6, 1:00 p.m.	" 7, 5:00 p.m.	18" below surface	5.8	5.8	5.8	25°c	69.46	
" 6, 1:00 "	" 7, 5:00 "	18" " "	6.	6.	6.	"	71.86	
" 6, 1:00 "	" 8, 11:00 a.m.	2' from bottom	6.4	6.4	6.4	"	76.65	
" 13, 1:00 "	" 14, 4:40 p.m.	18" below surface	6.6	6.7	6.65	26°c	81.19	
" 13, 1:00 "	" 15, 9:00 a.m.	2' from bottom	6.4	6.1	6.25	"	76.31	
" 27, 1:00 "	" 28, 12:40 p.m.	18" below surface	6.5	6.3	6.4	27°c	79.70	
" 27, 1:00 "	" 28, 12:40 "	18" " "	6.2	6.2	6.2	"	77.21	
" 27, 1:00 "	" 28, 1:00 "	2' from bottom	5.8	5.7	5.75	"	71.61	
" 27, 1:00 "	" 28, 1:00 "	2' " "	5.9	6.	5.95	"	74.09	
July 7, 5:45 p.m.	July 7, 5:45 p.m.	18" below surface	7.4	7.3	7.35	29°c	94.9	
....	....	....	......	......	......	......	......	
....	....	....	......	......	......	......	......	

DISSOLVED OXYGEN IN THE WATER OF THE

MISSISSIPPI RIVER, ALTON.

Date of Collection.	Date of Determination.	Depth of Collection.	Mg. per Liter. 1	Mg. per Liter. 2	Mg. per Liter. Aver.	Temp. of Water.	Per cent Saturation.	Remarks.
1899	1899							
June 25, 9:30 a.m.	June 25, 9:30 a.m.	18" below surface	7.6	7.6	7.6	26°c	92.8	Missouri shore.
" 25, 9:45 "	" 25, 9:45 "	18" " "	7.3	7.2	7.25	"	88.5	Midstream.
" 25, 10:00 "	" 25, 10:00 "	18" " "	7.0	6.8	6.9	"	84.2	Missouri shore.
Aug. 26, 7:55 a.m.	Aug. 26, 7:55 a.m.	18" " "	6.9	6.9	6.9	27°c	85.92	100' off Ill. shore.
" 26, 8:30 "	" 26, 8:30 "	18" " "	7.3	7.4	7.35	28°c	93.03	1/4 distance from Ill. shore.
" 26, 9:10 "	" 26, 9:10 "	18" " "	7.8	7.9	7.85	"	99.36	Midstream.
" 26, 9:40 "	" 26, 9:40 "	18" " "	7.7	7.8	7.75	"	98.10	1/4 distance from Mo. shore.
" 26, 10:10 "	" 26, 10:10 "	18" " "	7.8	7.7	5.75	"	98.10	100' fr. Mo. shore.
" 26, 1:15 p.m.	" 26, 1:15 p.m.	18" " "	7.5	7.5	7.5	29°c	96.89	100' fr. Ill. shore.
" 26, 1:45 "	" 26, 1:45 "	18" " "	7.7	7.8	7.75	"	100.12	1/4 distance from Ill. shore.
" 26, 2:15 "	" 26, 2:15 "	18" " "	8.0	8.1	8.05	"	104.00	Midstream.
" 26, 2:35 "	" 26, 2:35 "	18" " "	8.3	8.2	8.25	29.5°c	107.56	1/4 distance from Mo. shore.
" 26, 3:05 "	" 26, 3:05 "	18" " "	8.3	8.3	8.3	"	108.21	100' fr. Mo. shore.
" 26, 4:10 "	" 26, 4:10 "	18" " "	7.9	7.8	7.85	"	102.34	100' fr. Ill. shore.

TABLE A.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

AVERAGES OF RESULTS FOR YEAR 1899.

Report of ARTHUR W. PALMER, University of Illinois.

No. of Station.	Source of Water.	Period Covering 1899	Average of	Residue on Evaporation.						Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as	
				Total.	Dis-solved.	Sus-pended	Loss on Ignition. Tot'l	Dis-solv'd	Sus-pen'd		Total.	By Dis-solved.	By Suspd Matter.	Free Am-monia.	Albuminoid Am. Tot'l	Dis-solv'd	Sus-pnd'd	Total.	Dis-solved.	Sus-pended	Nitrites.	Nitrates
1	Illinois and Michigan Canal—Bridgeport	Apr. 27–Dec. 26	22.	584.1	499.7	85.4	65.1	39.5	25.9	124.2	35.1	17.9	17.2	17.16	2.513	1.158	1.355	4.985	2.282	2.703	.025	.295
2	Illinois and Michigan Canal—Lockport	" 24– " 25	31.	572.6	495.4	77.2	69.8	44.7	25.1	120.1	37.7	18.7	19.	15.58	2.681	1.147	1.534	5.072	2.373	2.699	.015	.23
3	Desplaines River—Lockport	" 24– " 26	33.	370.8	355.3	15.5	46.1	39.8	6.3	8.47	11.9	10.3	1.6	.077	.467	.374	.093	.986	.776	.21	.007	.29
4	Desplaines River—Joliet	May 23– " 26	30.	568.8	484.4	84.4	60.9	39.	21.2	105.7	28.5	16.2	12.3	14.92	2.195	.831	1.364	4.502	1.732	2.77	.01	.208
5	Desplaines River—Joliet	" 23–Sept. 11	17.	601.6	460.1	141.5	65.9	42.6	23.3	99.8	31.4	16.2	15.2	12.794	1.962	.621	1.341	4.35	2.999	1.351	.009	.26
6	Kankakee River—Wilmington	June 5–Dec. 26	29.	302.7	262.5	39.4	37.8	29.7	5.6	3.9	11.1	9.2	1.9	.047	.372	.266	.106	.886	.643	.245	.011	1.081
7	Illinois River—Morris	May 29– " 26	25.	410.5	381.1	17.6	43.1	36.6	6.	65.7	14.9	12.2	2.7	8.897	.911	.539	.372	1.916	1.116	.8	.026	.537
8	Fox River—Ottawa	" 29– " 28	30.	344.8	295.8	49.	52.8	46.7	7.4	5.84	9.9	8.3	1.7	.056	.416	.27	.146	.94	.556	.384	.008	.373
9	Illinois River—Ottawa	June 19– " 28	27.	395.2	379.9	15.3	41.2	35.7	5.6	59.4	11.3	10.6	1.	4.995	.498	.399	.099	1.111	.824	.287	.497	1.62
10	Big Vermilion River—La Salle	May 24– " 26	32.	1023.1	992.8	30.3	91.5	83.4	8.1	64.9	6.4	4.9	1.5	.254	.244	.159	.085	.639	.406	.243	.022	.845
11	Illinois River—La Salle	" 5– " 26	33.	408.5	369.3	39.2	47.6	39.9	7.7	47.3	12.6	10.1	2.5	2.648	.503	.363	.14	1.216	.808	.408	.413	2.047
12	Illinois and Michigan Canal—La Salle	" 24– " 26	32.	367.6	331.8	35.8	51.2	44.9	6.3	16.95	10.9	8.5	2.4	.751	.499	.323	.176	1.244	.827	.417	.043	.62
13	Illinois River—Henry	" 30– " 19	30.	403.2	363.1	40.1	44.5	38.5	6.	47.2	12.2	9.8	2.4	2.156	.594	.369	.225	1.382	.799	.583	.313	1.745
14	Illinois River—Averyville	" 1– " 26	33.	390.3	359.3	31.	43.8	37.8	6.	41.1	11.1	9.4	1.7	1.016	.49	.327	.163	1.143	.755	.388	.293	1.79
15	Illinois River—Wesley City	" 29– " 28	25.	496.2	359.4	136.8	47.8	42.3	5.5	42.6	12.3	9.9	2.4	1.156	.691	.388	.303	1.603	.901	.702	.287	1.67
16	Illinois River—Pekin	" 24– " 28	32.	391.7	359.2	32.5	46.1	40.2	5.9	41.3	12.5	10.	2.5	1.236	.681	.388	.293	1.532	.87	.662	.294	1.5
17	Illinois River—Havana	" 2– " 20	33.	386.5	343.9	42.6	42.4	36.6	5.8	35.8	12.1	9.6	2.5	1.203	.558	.36	.198	1.331	.816	.515	.227	1.12
18	Sangamon River—Chandlerville	" 31– " 20	23.	351.1	280.9	70.2	40.5	30.	10.5	5.6	7.3	5.	2.3	.115	.262	.154	.108	.72	.38	.34	.043	.62
19	Illinois River—Beardstown	" 24– " 28	29.	383.4	318.	65.4	35.6	32.5	5.7	30.4	10.8	8.3	2.5	.89	.443	.284	.159	1.09	.655	.435	.147	1.08
20	Illinois River—Kampsville	" 2– " 20	33.	382.6	281.6	101.	37.4	29.3	8.1	20.1	10.5	7.99	2.51	.27	.409	.241	.168	1.065	.615	.42	.054	.97
21	Illinois River—Grafton	" 3– " 27	34.	349.5	274.7	74.8	38.7	29.7	9.	18.5	9.9	7.8	2.1	.221	.412	.217	.165	1.037	.609	.428	.051	1.07
22	Mississippi River—Grafton	" 3– " 20	33.	342.4	153.1	189.3	36.1	26.7	9.4	2.6	15.8	10.8	5.	.039	.469	.218	.251	1.142	.489	.653	.01	.295
23	Miss. River—Alton, Illinois Shore	" 3– " 20	34.	351.	197.6	153.4	34.3	25.1	9.2	8.2	13.4	9.9	3.5	.062	.451	.241	.213	1.117	.552	.565	.019	.57
24	Miss. River—Alton, ¼ dis. from Ill. Shore	" 3– " 20	34.	343.8	178.3	165.5	34.4	26.1	8.3	5.8	14.5	10.6	3.9	.053	.469	.23	.239	1.147	.525	.622	.014	.422
25	Miss. River—Alton, Midstream	" 3– " 20	34.	381.	164.5	216.5	39.3	27.5	11.8	3.7	15.2	10.6	4.6	.041	.498	.218	.28	1.207	.484	.723	.009	.355
26	Miss. River—Alton, ¼ dis. from Mo. Shore	" 3– " 20	34.	402.9	157.3	245.6	40.8	27.1	13.7	2.7	15.2	10.8	4.4	.031	.512	.219	.293	1.269	.487	.782	.007	.314
27	Miss. River—Alton, Mo. Shore	" 3– " 20	33.	399.8	158.5	241.3	41.5	28.9	12.6	2.6	15.4	10.9	4.5	.032	.505	.232	.273	1.223	.498	.725	.009	.329
28	Missouri River—West Alton	July 8– " 28	23.	1284.6	285.2	999.4	50.3	17.6	32.7	14.9	13.9	4.4	9.5	.03	.475	.102	.373	1.378	.272	1.106	.006	.337
29	Miss. River—Mitchell, Illinois Shore	Apr. 28– " 21	32.	1092.1	190.8	901.3	48.2	21.9	25.4	6.	18.6	8.8	9.8	.039	.677	.201	.476	1.764	.45	1.314	.011	.442
30	Miss. River—Mitchell, Midstream	" 28– " 21	32.	1500.4	228.3	1272.1	57.3	22.2	35.1	8.	19.2	7.5	11.7	.027	.7	.162	.538	1.936	.383	1.553	.008	.387
31	Miss. River—Mitchell, Intake Tower	" 28– " 21	32.	1109.6	232.8	876.7	60.2	20.6	39.6	9.1	19.5	6.8	12.7	.028	.726	.142	.584	2.174	.359	1.815	.007	.399
32	Miss. River—Mitchell, Missouri Shore	" 28– " 21	32.	1909.3	247.1	1662.2	61.8	19.9	41.9	9.8	19.9	6.3	13.6	.027	.817	.133	.684	2.358	.327	2.031	.007	.431
33	St. Louis Tap Water	June 6– " 21	28.	336.	239.4	98.5	25.2	20.	5.2	9.7	7.2	5.6	1.4	.022	.19	.125	.065	.57	.323	.247	.005	.342
34	Miss. River—Jeff. Bar., East Shore	May 1– " 21	31.	1104.9	196.2	908.7	49.8	24.3	26.3	6.2	19.1	8.6	10.5	.041	.682	.195	.487	1.789	.45	1.339	.01	.405
35	Miss. River—Jeff. Bar., E. of Center	June 6– " 21	28.	1174.6	197.1	977.5	53.8	22.5	31.3	6.4	19.9	8.6	11.3	.036	.678	.18	.498	1.852	.428	1.424	.008	.36
36	Miss. River—Jeff. Bar., Center	May 1– " 21	32.	1427.7	208.8	1246.3	54.5	21.9	33.1	7.	20.1	8.1	12.	.031	.738	.175	.563	1.977	.396	1.581	.008	.366
37	Miss. River—Jeff. Bar., W. of Center	June 6– " 21	29.	1472.7	225.9	1246.8	55.8	19.2	36.6	9.	19.5	7.2	12.5	.031	.712	.151	.561	1.988	.338	1.65	.007	.367
38	Miss. River—Jeff. Bar., West Shore	May 1– " 21	30.	1578.	239.2	1338.8	54.6	21.5	33.1	9.3	19.8	6.8	13.	.037	.712	.143	.569	1.939	.356	1.583	.008	.35

TABLE B.

STREAMS EXAMINATION — SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

AVERAGES OF RESULTS FOR YEAR 1900.

Report of ARTHUR W. PALMER,
University of Illinois.

No. of Station.	Source of Water.	Period Covering 1900	Average of	Residue on Evaporation.						Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as	
				Total.	Dis-solved.	Sus-pended	Loss on Ignition. Tot'l	Loss on Ignition. Dis-solv'd	Loss on Ignition. Sus-pen'd		Total.	By Dis-solved.	By Suspd Matter.	Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Total.	Dis-solved.	Sus-pended	Nitrites.	Nitrates.
1(a)	Illinois and Michigan Canal—Bridgeport	Jan. 2–Oct. 8	29.	449.3	405.8	43.5	38.8	26.6	12.2	118.5	17.7	9.5	8.2	10.614	1.632	.77	.862	3.466	1.436	2.025	.042	.296
1(b)	Sanitary Canal—Kedzie Avenue	" 11– " 8	51.	212.8	172.1	40.7	25.6	18.3	7.3	14.2	9.8	4.9	4.9	1.247	.512	.176	.336	1.151	.398	.753	.015	.272
2	Illinois and Michigan Canal—Lockport	" 2–Sept. 24	36.	518.	451.	67.	42.7	30.	12.7	135.2	20.7	11.1	9.6	13.4	1.814	.791	1.023	3.619	1.58	2.039	.016	.27
3	Sanitary Canal—Lockport	" 2– " 28	58.	264.6	241.5	23.1	30.6	24.7	5.9	12.3	8.9	6.5	2.4	9.986	.415	.232	.183	.918	.502	.416	.007	.39
4	Desplaines River—Joliet	" 2–Oct. 8	41.	265.2	231.9	33.3	29.8	22.4	7.4	30.4	11.1	7.3	3.8	2.971	.707	.402	.305	1.574	.83	.744	.031	.31
6	Kankakee River—Wilmington	" 1–Sept. 27	34.	334.4	259.5	74.9	38.4	31.8	6.6	3.3	11.3	8.2	3.1	.073	.371	.251	.12	.892	.567	.325	.014	2.208
7	Illinois River—Morris	" 5– " 25	39.	287.7	237.2	50.5	29.5	23.9	5.6	23.5	10.4	6.7	3.7	2.374	.549	.275	.274	1.167	.635	.532	.1112	.761
8	Fox River—Ottawa	" 4–Oct. 6	34.	319.2	267.3	51.9	44.6	37.9	6.7	5.3	9.6	7.6	2.	.13	.399	.251	.148	.816	.491	.325	.008	.416
9	Illinois River—Ottawa	" 4– " 6	37.	293.3	269.5	23.8	30.5	25.6	4.9	21.4	8.6	6.9	1.7	1.311	.39	.246	.144	.848	.537	.311	.251	1.624
10	Big Vermillion River—La Salle	" 2– " 2	40.	480.7	409.8	70.9	52.3	42.8	9.5	16.4	7.3	4.8	2.5	.112	.259	.146	.113	.595	.314	.281	.018	3.522
11	Illinois River—La Salle	" 2– " 2	40.	292.4	245.4	46.9	32.	25.9	6.1	18.7	10.2	7.2	3.	.963	.392	.251	.141	.944	.611	.333	.153	1.703
12	Illinois and Michigan Canal—La Salle	" 2– " 2	40.	342.8	308.6	34.2	39.7	33.9	5.8	17.7	10.5	7.8	2.7	.944	.475	.327	.148	1.169	.697	.412	.049	1.005
13	Illinois River—Henry	" 9– " 1	37.	293.3	213.8	49.5	31.9	25.1	6.8	16.7	9.9	7.2	2.7	.755	.4	.257	.143	.959	.572	.387	.118	1.551
14	Illinois River—Averyville	" 2–Sept. 25	39.	289.7	245.3	44.4	37.2	26.5	10.7	16.8	9.1	7.2	1.9	.653	.347	.233	.114	.781	.469	.312	.085	1.64
15	Illinois River—Wesley City	" 5–Oct. 3	38.	325.1	246.4	78.7	31.9	26.2	8.7	17.5	10.1	6.9	3.2	.608	.386	.239	.147	.928	.547	.381	.07	1.535
16	Illinois River—Pekin	" 5– " 3	37.	297.4	249.3	48.1	33.1	27.4	5.7	17.1	10.2	7.2	3.	.672	.414	.244	.17	.924	.575	.349	.083	1.486
17	Illinois River—Havana	" 11–Sept. 26	31.	308.	203.5	101.5	31.1	21.6	9.5	14.6	9.6	7.1	2.5	.616	.391	.235	.156	.921	.504	.417	.077	1.312
18	Sangamon River—Chandlerville	" 3– " 26	33.	397.7	255.	142.7	39.4	28.3	11.1	5.	9.9	4.7	5.2	.107	.327	.146	.181	.783	.329	.454	.021	1.84
19	Illinois River—Beardstown	" 4–Oct. 4	40.	394.1	239.7	151.4	38.1	28.3	9.8	14.3	11.6	6.8	4.8	.507	.405	.236	.169	.966	.521	.445	.067	1.391
20	Illinois River—Kampsville	" 3–Sept. 26	36.	420.3	228.	192.3	37.4	25.4	12.	13.1	10.3	6.5	3.8	.394	.391	.208	.183	.97	.461	.509	.038	1.328
21	Illinois River—Grafton (*See also below)	" 4– " 26	140.	532.	209.1	322.9	37.6	23.2	14.4	10.3	12.6	7.	5.6	.401	.472	.233	.239	1.138	.481	.657	.021	1.426
22	Mississippi River—Grafton " "	" 4– " 28	90.	440.8	150.5	290.3	39.9	23.8	16.1	3.78	15.8	8.9	6.9	.139	.537	.22	.317	1.208	.472	.736	.0076	.504
23	Miss. River—Alton, Illinois Shore	" 4– " 26	38.	523.3	195.7	327.6	42.1	26.7	15.4	7.9	13.8	7.4	6.4	.269	.483	.212	.271	1.138	.477	.661	.017	1.063
24	Miss. River—Alton, ¼ dis. from Ill. Shore	" 4– " 5	35.	495.4	182.8	312.6	42.9	25.1	17.8	7.1	11.7	7.6	7.1	.259	.508	.196	.312	1.198	.434	.764	.014	.896
25	Miss. River—Alton, Midstream	" 4– " 26	37.	418.3	161.1	257.2	40.7	25.4	15.6	4.8	15.3	8.8	6.5	.21	.514	.205	.309	1.15	.434	.716	.01	.56
26	Miss. River—Alton, ¼ dis. from Mo. Shore	" 4– " 5	35.	449.8	155.	294.8	38.2	24.	14.2	4.1	15.6	8.1	7.5	.175	.535	.21	.325	1.188	.433	.755	.01	.525
27	Miss. River—Alton, Missouri Shore	" 4– " 26	38.	436.3	151.7	281.6	39.1	23.5	15.6	4.1	15.2	9.	6.2	.157	.507	.211	.296	1.144	.468	.676	.009	.535
28	Missouri River—West Alton	" 4–Oct. 9	40.	1866.6	266.1	1600.5	67.5	19.	48.5	16.1	18.6	4.9	13.7	.092	.875	.134	.741	2.279	.325	1.954	.0072	.662
29	Miss. River—Mitchell, Illinois Shore	" 5– " 4	61.	769.7	180.3	589.4	44.7	23.6	21.1	6.86	15.9	7.8	8.1	.153	.542	.193	.349	1.288	.403	.885	.008	.698
30	Miss. River—Mitchell, Midstream	" 5– " 4	61.	1062.9	194.4	868.5	50.	23.6	26.4	7.88	17.9	7.6	10.3	.115	.665	.181	.484	1.561	.411	1.15	.005	.579
31	Miss. River—Mitchell, Intake Tower	" 5– " 4	61.	1545.9	215.3	1330.6	57.5	20.5	37.	10.9	19.6	6.1	13.5	.116	.774	.152	.622	1.938	.327	1.611	.005	.593
32	Miss. River—Mitchell, Missouri Shore	" 5– " 4	59.	1106.	241.2	1164.8	55.1	20.9	31.2	13.3	19.7	4.9	14.8	.107	.825	.134	.691	2.131	.297	1.834	.005	.629
33	St. Louis Tap Water	" 4– " 4	40.	310.9	243.6	97.3	28.1	20.6	7.5	11.9	7.5	5.7	1.8	.039	.205	.193	.012	.551	.309	.242	.005	.647
34	Miss. River—Jeff. Bar., East Shore	" 4–Apr. 20	15.	671.4	185.4	486.	38.6	18.6	20.	7.02	15.2	7.6	7.6	.313	.631	.211	.42	1.515	.508	1.007	.017	1.016
35	Miss. River—Jeff. Bar., E. of Center	" 4– " 20	11.	653.4	187.7	465.7	39.4	19.[illegible]	10.8	7.6	11.9	7.5	7.4	.262	.601	.201	.403	1.463	.505	.958	.017	.963
36	Miss. River—Jeff. Bar., Center	" 4– " 20	15.	780.2	198.1	581.8	41.	20.9	20.1	8.7	16.	7.3	8.7	.302	.597	.232	.365	1.529	.475	1.054	.016	.853
37	Miss. River—Jeff. Bar., W. of Center	" 4– " 20	11.	977.6	268.8	688.8	38.4	17.5	20.9	11.7	15.7	7.	8.7	.257	.685	.192	.493	1.611	.489	1.122	.015	.797
38	Miss. River—Jeff. Bar., West Shore	" 4– " 20	15.	1013.6	246.8	766.8	35.8	16.	19.8	13.5	15.6	6.3	9.3	.242	.612	.178	.434	1.511	.409	1.132	.015	.76
*21	Illinois River—Grafton	" 4–Sept. 26	39.	431.6	229.1	209.5	38.5	27.3	11.2	12.47	10.9	6.6	4.3	.37	.403	.205	.198	.931	.478	.453	.021	1.362
*22	Mississippi River—Grafton	" 4– " 26	38.	365.	151.4	213.6	37.3	23.1	11.2	3.5	15.4	8.8	6.3	.111	.465	.216	.249	1.075	.453	.622	.007	.445

TABLE C.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION. Report of ARTHUR W. PALMER, University of Illinois.

AVERAGES OF RESULTS—For Period June, July, August and September, 1899.

No. of Station.	Source of Water.	Residue on Evaporation.			Loss on Ignition.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as	
		Total.	Dis-solved.	Sus-pended	Tot'l	Dis-solv'd	Sus-pnd'd		Total.	By Dis-solved	By Suspd Matter.	Free Ammonia.	Albuminoid Am Tot'l	Dis-solv'd	Sus-pnd'd	Total.	Dis-solved.	Sus-pended	Nitrites	Nitrates
1	Illinois and Michigan Canal—Bridgeport	590.2	505.2	85.	60.8	45.7	15.1	119.	39.9	20.6	19.3	17.22	2.38	1.01	1.37	4.75	2.31	2.44	.078	.....
2	Illinois and Michigan Canal—Lockport	572.2	492.7	79.5	74.2	51.6	22.6	116.1	41.1	21.2	19.9	15.2	2.37	1.02	1.35	4.7	2.26	2.44	.0234	.....
3	Desplaines River—Lockport	335.6	316.6	19.	52.4	48.	4.4	6.4	14.1	12.9	1.2	.07	.52	.44	.08	1.13	.9	.23	.01	.257
4	Desplaines River—Joliet (above town)	495.5	473.3	23.2	62.6	43.9	18.7	101.6	29.6	17.6	12.	15.8	1.76	.74	1.02	3.81	1.58	2.23	.0124	.217
6	Kankakee River—Wilmington	314.4	259.4	55.	41.5	34.1	7.4	3.7	13.5	10.6	2.9	.06	.45	.29	.16	1.033	.676	.357	.0114	.55
7	Illinois River—Morris	419.3	396.9	22.4	47.5	40.9	6.6	68.5	16.4	13.8	2.6	9.3	.85	.5	.35	1.95	1.11	.84	.0242	.258
8	Fox River—Ottawa	380.9	298.1	82.8	58.8	49.2	9.6	4.9	13.1	10.1	3.	.053	.53	.31	.22	1.28	.665	.615	.012	.4
9	Illinois River—Ottawa	405.9	392.7	13.2	47.3	41.8	5.5	59.8	13.3	12.2	1.1	3.917	.5	.4	.1	1.13	.87	.26	.691	1.79
10	Big Vermillion River—La Salle	746.	708.3	38.1	74.8	65.6	9.2	44.4	7.8	5.4	2.4	.148	.29	.17	.12	.749	.464	.285	.0295	.67
11	Illinois River—La Salle	417.9	372.2	45.7	49.2	43.4	5.8	50.8	14.1	11.2	2.9	1.68	.54	.36	.18	1.31	.81	.5	.5338	2.26
12	Illinois and Michigan Canal—La Salle	346.4	307.1	39.3	50.2	43.9	6.3	14.9	11.9	9.2	2.7	.578	.5	.33	.17	1.231	.86	.371	.0443	.526
13	Illinois River—Henry	407.2	332.8	74.4	45.9	40.1	5.8	43.2	14.6	11.1	3.5	1.02	.64	.38	.26	1.57	.92	.65	.4515	1.74
14	Illinois River—Averyville	389.5	346.2	43.3	46.2	42.1	4.1	36.8	12.4	10.4	2.	.36	.5	.35	.15	1.23	.85	.38	.1906	1.48
15	Illinois River—Wesley City	353.8	340.9	12.9	50.4	44.7	5.7	36.1	13.3	10.6	2.7	.36	.62	.38	.24	1.32	.97	.35	.1526	1.2
16	Illinois River—Pekin	384.6	343.3	41.3	44.8	42.1	2.7	36.7	13.9	11.1	2.8	.702	.64	.39	.25	1.54	.93	.61	.2268	1.053
17	Illinois River—Havana	376.7	330.	46.7	48.9	42.8	6.1	29.9	12.9	10.1	2.8	.74	.5	.34	.16	1.31	.87	.44	.164	.7605
18	Sangamon River—Chandlerville	379.5	273.2	106.3	50.4	36.3	14.1	5.	8.7	4.9	3.8	.033	.28	.14	.14	.851	.388	.463	.0287	.91
19	Illinois River—Beardstown	399.8	291.1	108.7	41.6	34.3	7.3	21.3	11.8	8.9	2.9	.41	.44	.26	.18	1.086	.61	.476	.1257	.8185
20	Illinois River—Kampsville	369.2	268.7	100.5	41.2	33.4	7.8	15.7	10.7	8.4	2.3	.11	.35	.23	.12	1.	.65	.35	.0744	.9
21	Illinois River—Grafton	311.9	238.1	73.8	41.2	34.6	6.6	14.8	10.	8.3	1.7	.1008	.34	.23	.11	.934	.61	.324	.0551	.8815
22	Mississippi River—Grafton	327.1	156.2	170.9	40.9	31.6	9.3	2.2	16.5	11.3	5.2	.0406	.46	.21	.25	1.208	.526	.682	.0058	.339
23	Mississippi River—Alton, Illinois Shore	343.3	198.4	144.9	40.	30.1	9.9	7.02	13.	9.8	3.2	.031	.4	.22	.18	1.066	.541	.525	.0184	.6
24	Mississippi River—Alton, ¼ dis. from Ill. Shore	319.5	174.6	134.9	36.5	28.5	8.	4.34	15.1	10.7	4.4	.023	.43	.22	.21	1.136	.514	.622	.0103	.441
25	Mississippi River—Alton, Midstream	353.5	162.1	191.4	39.7	31.	8.7	2.6	15.7	10.8	4.9	.032	.45	.2	.25	1.211	.475	.736	.0058	.346
26	Mississippi River—Alton, ¼ dis. from Mo. Shore	373.3	159.8	213.5	43.8	30.7	13.1	2.3	15.7	10.8	4.9	.028	.47	.21	.26	1.287	.502	.785	.0042	.385
27	Mississippi River—Alton, Missouri Shore	371.2	162.6	208.6	49.3	34.4	14.9	2.5	15.6	10.8	4.8	.023	.45	.22	.23	1.223	.497	.726	.0041	.332
28	Missouri River—West Alton	2267.6	222.7	2044.9	94.9	20.7	74.2	7.8	21.1	5.7	15.4	.021	.73	.11	.62	2.177	.293	1.884	.0071	.39
29	Mississippi River—Mitchell, Illinois Shore	1437.8	197.9	1239.9	60.7	25.4	34.3	5.1	21.2	8.5	12.7	.024	.77	.19	.58	2.162	.435	1.727	.0087	.458
30	Mississippi River—Mitchell, Midstream	1936.5	216.8	1719.7	75.8	26.3	49.5	5.6	23.	7.9	15.1	.022	.84	.16	.68	2.38	.398	1.982	.0071	.455
31	Mississippi River—Mitchell, Intake Tower	2160.9	213.1	1947.8	74.9	23.7	51.2	6.2	23.5	7.2	16.3	.023	.9	.14	.76	2.66	.376	2.284	.0054	.442
32	Mississippi River—Mitchell, Missouri Shore	2338.9	220.8	2118.1	79.3	25.4	53.9	6.4	24.4	7.	17.4	.024	.98	.13	.85	2.86	.356	2.504	.0054	.513

TABLE D.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION. Report of ARTHUR W. PALMER,

AVERAGES OF RESULTS—For Period June, July, August and September, 1900. University of Illinois.

No. of Station.	Source of Water.	Residue on Evaporation.						Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as	
		Total.	Dis-solved.	Sus-pended	Loss on Ignition.				Total.	By Dis-solved	By Suspd Matter	Free Ammonia.	Albuminoid Am			Total.	Dis-solved.	Sus-pended	Nitrites	Nitrates
					Tot'l	Dis-solv'd	Sus-pnd'd						Tot'l	Dis-solv'd	Sus-pnd'd					
1(a)	Illinois and Michigan Canal—Bridgeport	495.2	448.1	47.1	83.8	28.4	55.4	147.2	17.6	8.6	9.	13.84	1.085	.312	.773	2.572	.558	2.014	.0076	.225
1(b)	Sanitary Canal—Kedzie Avenue	201.2	174.3	29.9	26.1	18.5	7.6	13.7	8.9	4.6	4.3	1.174	.45	.158	.292	1.047	.365	.682	.0115	.243
2	Illinois and Michigan Canal—Lockport	572.5	496.6	75.9	45.6	31.3	14.3	168.4	20.9	10.	10.9	16.3	1.372	.475	.897	2.671	.958	1.713	.0017	.181
3	Sanitary Canal—Controlling Works, Lockport	279.1	265.2	14.9	38.1	31.7	6.4	14.2	8.8	7.	1.8	1.235	.426	.218	.208	.902	.435	.467	.0031	.216
4	Desplaines River—Joliet	232.5	210.2	22.3	28.9	22.4	6.5	24.3	7.9	5.3	2.6	2.132	.362	.174	.188	.753	.472	.281	.0037	.255
6	Kankakee River—Wilmington	298.4	251.4	47.	38.3	33.2	5.1	3.24	9.7	7.7	2.	.0901	.273	.218	.055	.694	.485	.209	.0132	1.127
7	Illinois River—Morris	267.2	232.9	34.3	28.1	24.2	3.9	22.8	8.3	5.4	2.9	2.112	.354	.15	.204	.765	.414	.321	.1636	.696
8	Fox River—Ottawa	316.1	282.	34.1	46.8	39.7	7.1	5.68	8.7	7.1	1.6	.105	.339	.24	.099	.662	.444	.218	.0061	.25
9	Illinois River—Ottawa	266.6	212.4	24.2	31.9	25.9	6.	25.9	6.9	5.4	1.5	1.038	.27	.184	.086	.596	.412	.184	.4079	1.601
10	Big Vermillion River—La Salle	481.	438.1	45.9	50.7	44.3	6.4	20.96	6.2	4.4	1.8	.0989	.237	.149	.088	.592	.309	.283	.0125	1.796
11	Illinois River—La Salle	269.9	242.5	27.4	28.9	24.1	4.8	23.3	8.3	5.5	2.8	.772	.286	.173	.113	.699	.459	.24	.2631	1.676
12	Illinois and Michigan Canal—La Salle	336.2	304.2	32.	44.1	40.6	3.5	14.27	9.9	7.1	2.8	.4318	.465	.275	.19	.95	.541	.409	.023	1.796
13	Illinois River—Henry	291.3	219.9	41.4	30.7	25.	5.7	20.9	8.3	5.3	3.	.43	.328	.178	.15	.825	.448	.376	.2058	1.54
14	Illinois River—Averyville	267.4	243.2	24.2	31.9	26.8	5.1	21.2	6.8	5.6	1.2	.268	.265	.175	.09	.6	.425	.175	.1395	1.34
15	Illinois River—Wesley City	300.6	219.1	51.5	33.4	25.6	7.8	21.1	7.8	5.7	2.1	.27	.296	.19	.106	.72	.461	.259	.0996	1.4
16	Illinois River—Pekin	291.	249.2	41.8	32.2	26.8	5.4	21.4	7.5	5.7	1.8	.354	.305	.2	.105	.674	.478	.196	.1259	1.276
17	Illinois River—Havana	298.9	241.3	51.6	37.9	27.9	10.	18.3	7.7	5.6	2.1	.316	.305	.21	.095	.844	.484	.36	.1713	1.29
18	Sangamon River—Chandlerville	403.1	216.5	156.9	41.3	28.2	13.1	4.83	9.7	4.8	4.9	.0818	.316	.17	.146	.75	.381	.369	.027	1.276
19	Illinois River—Beardstown	347.5	211.8	105.7	34.9	28.1	6.8	17.6	8.7	5.8	2.9	.151	.314	.21	.134	.718	.437	.281	.1071	1.26
20	Illinois River—Kampsville	322.8	234.8	88.	36.5	26.3	10.2	16.5	7.5	5.6	1.9	.0977	.275	.188	.087	.652	.403	.219	.0516	1.22
21	Illinois River—Grafton	320.2	234.8	85.4	34.7	26.8	7.9	14.95	7.9	5.8	2.1	.0796	.275	.185	.09	.535	.397	.138	.0208	1.089
22	Mississippi River—Grafton	383.1	159.9	223.5	42.8	25.1	17.7	3.49	15.6	9.2	6.4	.0885	.444	.199	.215	.918	.39	.558	.0051	.402
23	Mississippi River—Alton, Illinois Shore	389.1	201.2	187.9	40.3	28.5	11.8	8.8	11.7	7.1	4.6	.0822	.391	.206	.188	.84	.459	.381	.0132	.848
24	Mississippi River—Alton, ¼ dis. from Ill. Shore	380.5	191.9	188.6	41.	25.3	15.7	7.6	12.4	6.9	5.5	.0759	.396	.181	.215	.84	.388	.452	.0068	.77
25	Mississippi River—Alton, Midstream	363.1	168.2	194.9	44.	28.7	15.3	4.8	14.	8.4	5.6	.091	.41	.19	.22	.87	.363	.507	.009	.436
26	Mississippi River—Alton, ¼ dis. from Mo. Shore	366.6	177.5	189.1	40.9	26.6	14.3	3.7	14.3	8.1	6.2	.0759	.41	.222	.188	.86	.33	.53	.0049	.352
27	Mississippi River—Alton, Missouri Shore	329.7	158.1	171.6	38.2	27.2	11.	3.5	13.7	8.7	5.	.0817	.38	.193	.187	.84	.355	.485	.0051	.368
28	Missouri River—West Alton	2226.	241.2	1934.8	95.9	20.8	75.1	14.48	21.3	5.2	16.1	.0979	.879	.123	.756	2.447	.301	2.143	.0033	.591
29	Mississippi River—Mitchell, Illinois Shore	957.1	183.8	773.3	51.9	21.2	27.7	7.12	16.	7.3	8.7	.0829	.56	.173	.387	1.324	.335	.989	.0049	.56
30	Mississippi River—Mitchell, Midstream	1353.6	196.3	1157.3	57.	21.7	32.3	7.25	18.3	7.	11.3	.0864	.705	.163	.542	1.65	.385	1.265	.0033	.512
31	Mississippi River—Mitchell, Intake Tower	1938.9	213.8	1725.1	64.4	22.1	42.3	10.2	20.7	5.8	14.9	.0961	.83	.14	.69	2.06	.295	1.765	.0028	.556
32	Mississippi River—Mitchell, Missouri Shore	2068.1	207.3	1860.8	59.7	21.6	38.1	11.8	21.4	5.1	16.3	.1037	.92	.134	.786	2.27	.301	1.969	.003	.578

TABLE E.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

COMPARATIVE AVERAGES, 1899 AND 1900.

Source of Water.	Period Covering	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed Total.	Oxygen Consumed Dissolved.	Oxygen Consumed Suspend'd.	Nitrogen as Ammonia Free Ammonia	Nitrogen as Ammonia Albuminoid Am. Tot'l.	Nitrogen as Ammonia Albuminoid Am. Dissolv'd	Nitrogen as Ammonia Albuminoid Am. Susp'nd	Nitrogen as Nitrites.	Nitrogen as Nitrates.	No. of Colonies per Cubic Centimeter.
Illinois and Michigan Canal—Bridgeport	Apr.-Dec., 1899	562.7	481.8	80.9	119.2	30.3	15.2	15.1	15.9	2.64	1.25	1.39	.016	.166	1,245.000
" " " " "	Jan.-Apr., 1900	421.8	389.	33.	96.6	16.6	9.57	7.03	8.65	2.05	1.04	1.05	.0214	.074	631.000
Illinois and Michigan Canal—Lockport	May-Dec., 1899	562.	485.1	76.9	117.4	32.1	17.5	11.6	15.7	2.42	1.29	1.13	.002	.18	650.000
" " " " "	Jan.-June, 1900	491.	451.8	39.4	124.5	18.1	11.1	6.8	10.9	2.07	.962	1.15	.0133	.0664	1,755.000
Desplaines River—Lockport	May-Dec., 1899	371.	353.4	17.6	7.9	10.1	8.8	1.3	.072	.452	.378	.074	.011	.167	9.380
" " "	Jan.-June, 1900	363.8	334.	29.7	6.1	9.08	7.8	1.1	.143	.381	.291	.097	.0138	.3467	12,500
Desplaines River—Joliet (above town)	May-Dec., 1899	561.	480.1	80.9	104.8	25.4	14.4	11.	14.7	2.12	.97	1.15	.007	.12	492.000
" " " " "	Jan.-June, 1900	307.	274.	32.	41.5	10.4	7.1	3.3	4.22	.833	.474	.359	.0215	.086	744,286
Kankakee River—Wilmington	June-Dec., 1899	307.4	271.3	36.1	3.4	8.5	7.	1.5	.054	.352	.290	.062	.010	.733	5,000
" " "	Jan.-June, 1900	343.8	268.	76.	2.9	9.4	7.2	2.13	.099	.327	.222	.106	.174	1.58	16.100
Illinois River—Morris	May-Dec., 1899	413.1	394.2	15.9	68.1	13.2	8.9	4.3	9.33	.863	.533	.330	.025	.31	400,000
" " "	Jan.-June, 1900	313.	242.8	73.	24.46	9.6	6.8	3.2	2.458	.599	.315	.24	.075	.424	445.000
Fox River—Ottawa	May-Dec., 1899	345.	297.7	47.3	4.99	8.3	5.9	2.4	.074	.470	.280	.190	.010	.26	6,500
" " "	Jan.-June, 1900	326.7	264.	62.	3.9	8.97	6.87	2.1	.111	.42	.262	.158	.0136	.345	20.600
Illinois River—Ottawa (above town)	June-Dec., 1899	395.8	380.6	15.2	58.5	9.	7.4	1.6	4.17	.503	.381	.122	.37	.98	27.470
" " " " "	Jan.-June, 1900	320.	292.	28.	15.3	8.5	6.9	1.59	1.555	.414	.277	.1366	.197	.966	116.000
Big Vermilion River—La Salle	May-Dec., 1899	996.6	957.3	39.3	61.2	4.9	3.6	1.3	.224	.247	.153	.094	.017	.57	7.970
" " "	Jan.-June, 1900	441.	353.	87.	10.1	6.4	3.8	2.5	.1	.285	.12	.164	.044	.227	19.200
Illinois River—La Salle	May-Dec., 1899	417.6	368.1	49.5	46.1	9.4	7.7	1.7	27.72	.496	.361	.132	.32	1.38	8,8.0
" " "	Jan.-June, 1900	307.7	250.9	56.9	17.5	9.06	6 95	2.1	1.046	.4228	.258	.164	.109	.979	94.000
Illinois River—Henry	May-Dec., 1899	399.1	370.1	29.	44.2	9.9	7.7	2.2	2.008	.548	.376	.172	.255	1.12	13,290
" " "	Jan.-June, 1900	306.	250.	52.	13.26	8.8	6.9	1.9	.916	.378	.235	.142	.102	.8	64.200
Illinois and Michigan Canal—La Salle	May-Dec., 1899	375.6	336.1	39.5	15.6	8.	6.3	1.7	.715	.454	.311	.143	.042	.62	49,550
" " " " "	Jan.-June, 1900	351.	313.	38.8	16.7	8.2	7.	1.4	1.244	.447	.286	.159	.0658	.88	54,600
Illinois River—Averyville	May-Dec., 1899	387.6	360.5	27.1	40.9	8.6	7.1	1.5	.929	.452	.331	.121	.256	1.11	3,670
" " "	Jan.-June, 1900	303.	247.	52.2	13.55	8.1	6.56	1.7	.8147	.366	.226	.139	.064	1.15	51,800
Illinois River—Wesley City	May-Dec.; 1899	394 9	362.4	32.5	40.9	10.1	7.7	2.4	1.26	.693	.411	.282	.249	.97	758.000
" " "	Jan.-June, 1900	348.	244.	104.	11.98	9.1	6.47	2.6	.562	.415	.213	.202	.083	1.03	36.800
Illinois River—Pekin	May-Dec., 1899	388.6	355.4	33.2	38.4	9.2	7.2	2.	1.096	.615	.376	.239	.231	.960	492,300
" " "	Jan.-June, 1900	351.	237.	96.	12.3	6.6	6.5	2.5	.699	.429	.258	.19	.06	.99	68,400
Illinois River—Havana	May-Dec., 1899	390.4	343.7	46.7	36.2	8.6	6.9	1.7	1.235	.529	.353	.176	.194	.87	17,470
" " "	Jan.-June, 1900	303.	213.	58.	11.2	7.5	6.07	1.38	.597	.361	.218	.142	.065	.57	23,100
Sangamon River—Chandlerville	May-Dec., 1899	335.1	267.2	67.9	4.52	5.5	3.4	2.1	.052	.239	.149	.090	.020	.61	5.080
" " "	Jan.-June, 1900	409.	260.	148.	4.75	7.6	3.92	3.68	.096	.308	.135	.174	.026	1.32	21.200
Illinois River—Beardstown	May-Dec., 1899	385 6	326.9	58.7	29 3	7.6	5.9	1.7	.83	.528	.301	.127	.151	.81	14.680
" " "	Jan.-June, 1900	460.	249.	196.1	10.7	10.7	6.28	4.4	.691	.441	.217	.224	.106	.685	28,200
Illinois River—Kampsville	May-Dec., 1899	369.3	296.8	72.5	22.9	7.4	5.6	1.8	.309	.425	.262	.163	.075	.76	4.810
" " "	Jan.-June, 1900	500.5	233.	266.	11.3	9.8	5.9	3.9	.659	.445	.195	.25	.014	.87	33.700
Illinois River—Grafton	May-Dec., 1899	473.1	385.1	88.	18.3	7.8	6.	1.8	.253	.400	.257	.143	.044	.71	10.210
" " "	Jan.-June, 1900	503.	210.	260.	9.8	9.8	5.7	4.1	.163	.423	.1931	.2299	.031	1.06	21.000

TABLE E—Continued.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

COMPARATIVE AVERAGES, 1899 AND 1900.

Report of EDWIN O. JORDAN, University of Chicago.

Source of Water.	Period Covering	Residue on Evaporation.			Chlorine.	Oxygen Consumed			Nitrogen as Ammonia				Nitrogen as		No. of Colonies per Cubic Centimeter.
		Total.	Dissolved.	Suspended		Total.	Dissolved.	Suspend'd.	Free Ammonia	Albuminoid Am. Tot'l.	Albuminoid Am. Dis solv'd	Albuminoid Am. Sus-pnd'd	Nitrites.	Nitrates.	
Mississippi River—Grafton	May-Dec., 1899	407.3	165.8	241.5	2.8	12.7	8.6	4.1	.082	.492	.226	.266	.005	.21	7,600
" "	Jan.-June, 1900	414.	155.	247.	5.3	13.	7.6	5.45	.123	.522	.177	.346	.007	.3	30,600
Mississippi River—Alton, East Bank	May-Dec., 1899	353.2	202.4	150.8	7.6	10.4	7.3	3.1	.076	.417	.249	.168	.042	.45	7,900
" " " " "	Jan.-June, 1900	587.	204.	371.	7.2	10.9	6.1	4.8	.242	.489	.171	.318	.0165	.69	30,300
Mississippi River—Alton, East of Center	May-Dec., 1899	326.2	182.9	143.3	5.4	11.4	8.	3.4	......	.442	.236	.2[illegible]6	.026	.33	7,720
" " " " " "	Jan.-June, 1900	535.	178.	357.	5.8	12.1	6.5	5.6	.251	.509	.173	.336	.013	.65	47,000
Mississippi River—Alton, Midstream	May-Dec., 1899	379.2	164.9	214.3	3.7	11.5	8.4	3.1	.051	.465	.228	.237	.008	.28	6,650
" " " "	Jan.-June, 1900	508	162.	346.	4.9	13.2	7.	6.6	.224	.528	.187	.34	.01	.429	51,800
Mississippi River—Alton, West of Center	May-Dec., 1899	412.	168.	244.	2.7	12.6	7.7	4.9	.047	.482	.222	.260	.004	.23	6,350
" " " " " "	Jan.-June, 1900	499.	155.	348.	4.6	13.	6.9	6.3	.194	.541	.174	.365	.0098	.396	55,200
Mississippi River—Alton, West Bank	May-Dec., 1899	391.2	163.8	227.4	2.74	11.9	7.7	4.2	.041	.498	.241	.257	.005	.26	7,760
" " " " "	Jan.-June, 1900	489.	153.	336.	4.3	13.	6.6	6.	.159	.495	.179	.316	.0102	.379	42,500
Missouri River—West Alton	July-Dec., 1899	1121.5	294.7	829.8	15.4	8.7	2.9	5.8	.035	.377	.079	.298	.002	.27	8,170
" " " "	Jan.-June, 1900	17[illegible]6.	294.	1416.	15.4	13.9	3.7	10.1	.065	.754	.111	.613	.0066	.56	43,100
Mississippi River—Chain of Rocks, East Bank	May-Dec., 1899	1203.1	198.6	1004.5	5.1	14.5	6.8	7.7	.057	.697	.199	.498	.011	.42	12,480
" " " " " " "	Jan.-June, 1900	917.	199.	723.	6.7	13.7	6.2	7.4	.211	.586	.16	.426	.0151	.58	36,200
Mississippi River—Chain of Rocks, Midstream	Apr.-Dec., 1899	1612.2	221.8	1387.4	7.	15.6	5.8	9.8	.048	.744	.159	.5[illegible]6	.005	.34	12,390
" " " " " "	Jan.-June, 1900	1269.	209.	1055.	8.6	14.8	5.7	9.1	.145	.697	.138	.559	.0096	.43	46,600
Mississippi River—Chain of Rocks, Intake Tower	Apr.-Dec., 1899	1945.9	216.4	1699.5	7.8	15.7	5.5	10.2	.051	.806	.147	.659	.002	.35	12,920
" " " " " " "	Jan.-June, 1900	1626.	227.	1399	10.3	14.7	5.4	9.3	.117	.699	.125	.574	.0815	.38	41,000
Mississippi River—Chain of Rocks, West Bank	Apr.-Dec., 1899	1993.2	240.8	1752.4	8.8	15.3	4.6	10.7	.019	.904	.139	.765	.003	.37	11,960
" " " " " " "	Jan.-June, 1900	2056	265.	1791.	12.8	14.9	4.1	10.7	.081	.714	.106	.608	.0083	.46	49,700
St. Louis Tap Water	June-Dec., 1899	342.2	251.6	90.6	8.8	5.8	4.6	1.2	.021	.168	.126	.042	.003	.37	2,330
" " "	Jan.-June, 1900	351.6	254	101.	13.4	6.	4.4	1.6	.028	.196	.12	.075	.0052	.4	7,700
Mississippi River—Jefferson Barracks, East Bank	May-Dec., 1899	1228.1	202.2	1025.9	5.6	15.	6.5	8.5	.018	.714	.188	.556	.005	.35	17,590
" " " " " "	Jan.-Apr., 1900	686.	191.	492.	7.2	12.6	6.3	5.8	.263	.612	.179	.435	.016	.76	65,600
Mississippi River—Jefferson Barracks, East of Center	June-Dec., 1899	1311.7	205.1	1106.6	5.8	15.	6.3	8.7	.015	.729	.190	.539	.006	.37	13,120
" " " " " " "	Jan.-Apr., 1900	722.	189.	533.	7.2	12.9	6.05	6.9	.285	.639	.173	.447	.015	.6	59,700
Mississippi River—Jefferson Barracks, Midstream	May-Dec., 1899	1502.2	215.1	1286.8	6.4	15.2	5.9	9.3	.049	.710	.163	.547	.004	.34	13,320
" " " " "	Jan.-Apr., 1900	837.	197.	641.	8.4	12.8	5.8	7.	.223	.607	.167	.44	.013	.565	69,500
Mississippi River—Jefferson Barracks, West of Center	June-Dec., 1899	1633.1	233.3	1399.8	7.9	11.9	4.9	10.	.018	.686	.113	.513	.003	.51	21,850
" " " " " " "	Jan.-Apr., 1900	1077.	227.	857.	11.3	12.8	5.	7.7	.206	.617	.1605	.486	.012	.53	74,800
Mississippi River—Jefferson Barracks, West Bank	May-Dec., 1899	1792.5	232.6	1559.9	8.2	15.8	4.8	11.	.058	.838	.148	.690	.005	.43	25,180
" " " " " " "	Jan.-Apr., 1900	1087.	248.	776.	12.6	12.3	4.7	7.5	.259	.608	.139	.468	.012	.48	69,900
Sanitary Canal, Kedzie Street	Apr.-June, 1900	215.8	188.	28.7	9.87	8.05	5.01	2.9	1.31	.499	.22	.279	.0296	.289	1,332,000
Sanitary Canal, Dam at Lockport	Apr.-June, 1900	196.	183.	12.9	12.7	6.27	4.97	1.3	1.33	3.47	.185	.161	.0185	.118	1,167,000
Desplaines River, Joliet (below town)	....	597.5	486.7	110.8	97.6	25.5	14.5	11.	12.83	2,45	1.05	1.41	.011	.066	766,700
Joliet, below Rock Island Bridge or Jefferson Street	....	250.	224.	28.	24.5	8.	5.9	1.9	3.37	.521	.255	.266	.0383	.287	1,054,000

TABLE F.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—MONTHLY AVERAGES OF COLONY COUNTS.

Report of T. J. BURRILL, University of Illinois.

YEAR.	LOCATION.	SOURCE OF WATER.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1900	Kedzie Ave.	Sanitary Canal					1,474,000	377,000	863,888	1,233,700	1,186,665			
1899	Bridgeport	Illinois and Michigan Canal						1,035,500	3,895,555		2,483,333	2,150,000	2,497,000	2,151,666
1900	"	" " " "	3,862,000	6,063,333	4,240,000	6,037,500				1,215,000	315.000			
1899	Lockport	" " " "						3,885,750	5,323,750	3,215.000	696,666	1,335,000	582,000	746,250
1900	"	" " " "	2,256,000		4,405,000	3,891,250	1,649,000	997,500	731,250	790,000	3,290,000			
1899	"	Desplaines River						14,912	11,162	38,850	24,160	25,783	9,640	16,300
1900	"	" "	42,370		167,500	21,375	5,637	40,162						
1900	"	Sanitary Canal							601,250	1,205,666	651,666			
1899	Joliet	Desplaines River						1,445,000	2,848,666	3,220,000	217,000	1,145,000	1,023,000	1.026,250
1900	"	" "	973,000	1,448,333	2,000,000	1,655,000	485,000	18,000	170,000	134,750	203,330			
1899	" S.	" "						1,369.375	3,201,666	4,611,666	985,000			
1899	Wilmington	Kankakee River						22,837	4,720	4,000	5,387	11,075	11,650	25,300
1900	"	" "	5,790	102,000	75,250	52,000	3,300	3.650	950	1,975	4,950			
1899	Morris	Illinois River						999,875	930,750	4,882,375	2,186,100	505,000	747,000	170,000
1900	"	" "	2,737,500	1,731,250	1,593,750	392,500	46,200	246.125	42,375	76,600	624,750			
1899	Ottawa	" "						20.550	9,298	7,512	40,100	33,050	18,070	261,766
1900	"	" "	256,250	228,000	116,750	68,500	15,125	14,237	2,950	18,830	34,875			
1899	"	Fox River						11,027	3.670	4,560	4,822	5,475	5,900	7,000
1900	"	" "	12,275		84,166	49,250	5,800	2.412	3,266	2,962	9,375			
1899	La Salle	Illinois River						17.800	6,370	11,875	9,700	27,112	11,910	101,400
1900	"	" "	192,400	278,750	367,666	96,125	13,050	12,275	3,500	13,000	17,412			
1899	"	Illinois and Michigan Canal						170,050	157.766	241,000	166,375	131,250	164,400	223,000
1900	"	" " " "	193,300	169,625	212,000	157,750	25,300	31,062	38,375	17,200	73,775			
1899	"	Big Vermilion River						7.062	4,510	1,480	3,102	3,987	14,050	12,757
1900	"	" " "	13,750	45,912	103,125	33,000	22,270	8,550	5,475	7,000	2,200			
1899	Henry	Illinois River						64,350	22,362	26,350	11,100	8,575	5,880	59,966
1900	"	" "	41,462	160,500	183,625	39,875	14,260	3,487	40,433	1,850	136,700			
1899	Averyville	" "						8,700	9,358	4,000	3,100	3,768	1,640	9,300
1900	"	" "	27,570	129,500	93,375	13,087	15,920	1.637	4,233	8,060	4,466			
1899	Wesley City	" "						1,476,480	3,925,000	2,355,000	484,575	2,373,750	705,000	20,666
1900	"	" "	89,000	95,666	107,750	22,750	70,400	58,625	96,000	99,250	264,375			
1899	Pekin	" "						1,500,000	737,625	1,928,333	391,250	1,047,500	812,000	69,000
1900	"	" "	128,100	84,000	125,125	27,250	106,500	150,625	313,375	286,500	1,061,875			
1899	Havana	" "						6.816	5,950	5,725	6,137	12,433	159,040	301,333
1900	"	" "	124,166	79,575	181,875	26.500	23,850	15,000	24,125	21,362	50,662			
1899	Chandlerville	Sangamon River						7,125	9,900	19,783	20.300	3,683	7,100	10,266
1900	"	" "	10,620	101,433	105,875	13,625	11,850	29,562	13,900	4,450	4,316			
1899	Beardstown	Illinois River						4.400	1,352	10,287	3,039	5,000	26,070	114,100
1900	"	" "	239,750	420,500	145,750	28,375	12,880	7,962	4,275	15,090	5,550			

TABLE F—Continued. STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—MONTHLY AVERAGES OF COLONY COUNTS. Report of T. J. BURRILL, University of Illinois.

YEAR.	LOCATION.	SOURCE OF WATER.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1899	Kampsville...	Illinois River						5,316	3,161	6,225	3.480	1,717	5.055	28.850
1900	"	" "	36,725	202,666	155,625	15,825	5,038	2,425	1,850	10,700	5,850			
1899	Grafton	" "						4,155	2,628	1,806	793	743	7,210	40,344
1900	"	" "	46,600	191,500	159,500	14,550	6,850	6,875	3,911	2,708	5,274			
1899	"	Mississippi River						5,017	915	1,379	2,356	2,406	8,380	15,912
1900	"	" "	13,750	69,625	227,750	66,750	10,580	3,650	3,027	3,291	3,932			
1899	Alton.........	Miss. River, 100 ft. from Ill. Shore						2,457	1,242	3,319	3,612	2,775	9.000	23.750
1900	"	" " " " " "	20,470	86,500	119,750	18.125	17,620	13,125	3,266	3,180	6.687			
1899	"	" " ¼ dist. from Ill. Shore						6,087	809	2,355	3.000	2,112	17,030	22,553
1900	"	" " " " " "	18,940	98,125	175,000	46,625	18,180	7,875	4,800	6,180	5,500			
1899	"	" " Center of Channel						5.775	2,021	2,465	3,725	2,425	7,100	18,300
1900	"	" " " "	23,350	105,125	166,250	66.000	26.000	4,375	6,966	6,710	8,200			
1899	"	" " ¼ dist. from Mo. Shore						5,725	1,753	2,647	2.525	2,375	6.390	8,416
1900	"	" " " " " "	19,040	88,500	149,875	48,500	16,040	6,750	9,050	5,640	6,400			
1899	"	" " 100 ft. from Mo. Shore						7,250	2,927	2,215	2.562	2,200	5,750	4.183
1900	"	" " " " " "	18,620	104,100	144,875	85,500	24,080	5,875	3,862	7,610	4.433			
1899	Mitchell......	" " 400 yds. from Ill. Shore						19,706	5,737	11,700	5,325	3.075	5.087	9,816
1900	"	" " " " " "	35,087	113,100	98 166	17,500	21,800	14,875	26,191	6,110	4,357			
1899	"	" " Center						12,883	6.830	15,850	12.063	11,775	25.075	15.183
1900	"	" " "	70,075	95,150	97,000	60,125	34,200	21,625	24.250	8,725	13.310			
1899	"	" " Inlet Tower						18,100	6,275	20,437	14,737	14.462	26.612	31.650
1900	"	" " " "	76,525	66,800	125,833	58,375	31.300	23,750	27,045	13,300	9,170			
1899	"	" " 400 yds. from Mo. Shore						16,650	5.902	32,275	9.250	10,187	30,125	25.233
1900	"	" " " " " "	64,925	50,300	143,333	57,500	64,125	25,375	29.275	10,256	12,927			
1899	West Alton...	Missouri River							20,000	32,695	23,417	16.325	28,510	10.475
1900	" "	" "	84,960	40,066	179,750	77,000	66,200	63.375		12,450	25,187			
1899	Jeff. Barracks	Mississippi River, East Shore						66,250	10.050	87,825	69,250	59,500	5,750	6,133
1900	" "	" " " "	19,750	97,500	130,875	54,666								
1899	" "	" " East of Center						37,475	13,400	45,712	43,750	33.625	9,000	9.211
1900	" "	" " " "	24,460	136,500	145,375	25,500								
1899	" "	" " Center						41,100	6,962	29.837	18.787	11,833	11,600	6.675
1900	" "	" " "	28,720	79,666	129,750	48,333								
1899	" "	" " West of Center						55,350	5,737	54,525	42,125	45,250	25,900	19.087
1900	" "	" " " "	41,460	79,750	130,500	56,500								
1899	" "	" " West Shore						33,637	12,050	63,125	60.125	52,875	22.562	16.350
1900	" "	" " " "	23,500	61.666	151,750	55,333								
1899	St. Louis Tap.							14.392	851	810	1.990	1,710	8.952	2.433
1900	" "		4.865	8.233	10,137	5.233	6,300	2.625	1,650	1,950	10,125			
1900	Chicago Tap..			2,425	850	750	140	88	96	95	213			

TABLE G.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

For Period June, July, August and September, 1899-1900.

Report of ARTHUR W. PALMER, University of Illinois.

Source of Water.	Year.	Average.	Residue on Evaporation. Total.	Dis-solved.	Sus-pended.	Loss on Ignit'n Tot'l	Dis-solv'd	Sus-pnd'd		Chlorine.	Oxygen Consumed. Total.	By Dis-solved	By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Dis-solv'd	Sus-pnd'd	Organic Nitrogen. Total.	Dis-solved.	Sus-pended	Nitrogen as Nitrites	Nitrates
Illinois River —Grafton	1899	Average of 4 mos.	341.9	268.05	73.8	41.3	34.6	6.7	....	14.8	10.05	8.29	1.76	.101	.339	.233	.106	.936	.615	.321	.055	.881
	1900	" " 4 "	320.2	239.8	85.4	34.7	26.8	7.9	....	14.9	7.9	5.8	2.1	.079	.274	.185	.089	.609	.399	.31	.021	1.089
	1899	Highest..........	......	July 19	217.2	....	.....	....	Aug. 2	32.	12.7	June 14	Sept. 27	.396	.512	June 14	....	......	.....	......	.165	July 12
	1900	"	......	Sept. 5	146.4	....	.....	....	Aug. 13	22.	11.9	July 27	Sept. 26	.16	.4	Sept. 5	....	......	.....	......	.035	July 20
	1899	Lowest	......	June 28	.8	....	.....	....	June 7	4.5	8.4	Sept. 20	Aug. 9	.01	.224	June 28	....	......	.....	......	.004	June 14
	1900	"	......	Aug. 6	28.2	....	.....	....	June 6	12.	6.6	Aug. 13	July 6-20	.032	.208	July 6	....	......	.....	......	.007	June 25
Mississippi River —Grafton	1899	Average of 4 mos.	327.1	156.1	171.	40.9	31.6	9.3	....	2.17	16.51	11.33	4.18	.038	.457	.209	.248	1.208	.525	.683	.0088	.339
	1900	" " 4 "	383.4	159.9	223.5	42.8	27.6	14.2	....	3.47	15.6	9.2	6.4	.0882	.447	.191	.256	.941	.389	.552	.005	.399
	1899	Highest..........	......	June 7	549.6	....	.....	....	Aug. 30 Sept. 6	3.5	25.5	June 7	June 14	.044	.88	June 7	....	......	.....	......	.02	July 19
	1900	"	......	July 30	440.8	....	.....	....	July 9	4.8	19.3	Sept. 5	Sept. 26	.162	.544	July 30	....	......	.....	......	.013	June 25
	1899	Lowest..........	......	July 12	12.8	....	.....	....	June 7	.3	10.6	Sept. 6	June 7 Aug. 21	.012	.32	Aug. 2 Sept. 6	..	......	.....	......	.001	Aug. 2
	1900	"	......	Sept. 12	66.6	....	.....	.. .	Sept. 26	2.2	9.4	June 13	June 6	.024	.288	June 20	....	......	.....	......	.001	June 13 July 23
	1899	Average of 3 mos. July, Aug. Sept.	2267.5	222.7	2044.8	94.9	20.7	74.2	....	7.94	21.06	5.66	15.4	.0211	.729	.111	.618	2.177	.293	1.884	.007	.39
	1900	Average of 4 mos.	2225.8	241.2	1984.6	95.9	20.8	75.1	....	14.99	21.38	5.22	16.16	.0979	.878	.1232	.755	2.448	.304	2.144	.003	.591
Mississippi River —W. Alton	1899	Highest..........	......	Aug. 9	3299.6	....	.....	....	Sept. 28	14.8	31.9	Aug. 2	Aug. 31	.028	1.052	Aug 17	....	......	.....	......	.01	July 27 Aug. 17
	1900	"	......	July 24	3917.2	....	.....	..	Sept. 25	34.6	28.7	June 27	July 10	.166	1.76	June 27	....	......	.....	......	.007	June 12 Aug. 1 Sept. 18
	1899	Lowest..........	......	Sept. 28	644.4	....	... .	....	July 27	5.1	11.55	Sept. 28	Sept. 28	.006	.352	Sept. 21	....	......	.....	......	.002	Aug. 31
	1900	"	......	Aug. 14	738.4	....	.....	....	July 3	6.4	13.4	Aug. 14	June 5	.016	.324	July 10	....	......	.....	......	.001	June 27 July 3 Aug. 7, 28 Sept. 4, 25
Kankakee R. —Wilmington.	1899	Average of 4 mos.	314.4	259.4	55.	41.5	34.05	7.4	....	3.687	13.5	10.59	2.9	.0601	.446	.296	.15	.733	.676	.057	.0114	.55
	1900	" " 4 "	298.4	251.48	46.92	38.3	33.2	5.1	....	3.24	9.7	7.73	1.97	.0901	.273	.218	.055	.693	.485	.208	.0132	1.127
Fox River —Ottawa	1899	" " 4 "	380.9	298.05	82.85	58.8	49 15	9.6	....	4.86	13.07	10.11	2.96	.0502	.533	.31	.223	1.28	.665	.615	.012	.399
	1900	" " 4 "	316.1	282.02	23.08	46.8	39.6	7.2	....	5.7	8.68	7.1	1.58	.105	.338	.239	.099	.662	.443	.219	.0064	.253
Big Vermillion River, La Salle	1899	" " 4 "	746.4	708.3	38.1	74.8	65.6	8.2	....	44.44	7.81	5.39	2.42	.148	.292	.172	.12	.749	.464	.285	.029	.675
	1900	" " 4 "	484.	438.11	45.9	50.7	44.3	6.4	....	20.9	6.18	4.36	1.82	.098	.262	.149	.113	.5916	.3087	.2829	.012	1.796
Sangamon R., Chandlerville	1899	" " 4 "	379.5	273.2	106.3	50.4	36.3	14.1	....	4.78	8.74	4.96	3.78	.033	.277	.143	.134	.8513	.3884	.4629	.0287	.945
	1900	" " 4 "	403.3	246.5	156.8	41.3	28.2	13.1	....	4.83	9.74	4.83	4.91	.0815	.3116	.169	.143	.7327	.381	.3517	.0267	1.276
Illinois River —Grafton	1899	" " 4 "	341.9	268.05	73.8	41.3	34.6	6.7	....	14.8	10.05	8.29	1.76	.101	.339	.233	.106	.936	.615	.321	.055	.881
	1900	" " 4 "	320.2	234.8	85.4	34.7	26.8	7.9	....	14.9	7.9	5.8	2.1	.079	.274	.185	.089	.609	.399	.21	.021	1.089

TABLE H.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

FOR YEARS 1899-1900.

Report of ARTHUR W. PALMER,
University of Illinois.

Source of Water.	Year.	Average.	Residue on Evaporation. Total.	Dis-solved.	Sus-pended	Loss on Ignit'n Tot'l	Dis-solv'd	Sus-pen'd		Chlorine.	Oxygen Consumed. Total.	By Dis-solved.	By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Dis-solv'd	Sus-pnd'd	Organic Nitrogen. Total.	Dis-solved.	Sus-pended	Nitrogen as Nitrites.	Nitrates.
Illinois River —Grafton	1899	Average of 34.....	349.5	274.7	71.8	38.7	29.7	9.	....	18.5	9.9	7.8	2.1	.221	.412	.247	.165	1.037	.609	.428	.051	1.07
	1900	" " 39.....	438.6	229.1	209.5	38.5	27.3	11.2	....	12.47	10.9	6.6	4.3	.37	.403	.205	.198	.931	.478	.453	.024	1.362
	1899	Highest..........	......	May 31	500.8	....	.....	...	Nov. 8	36.6	16.8	May 31	....	.88	Nov. 29	....	....	1.896	Nov. 15	......	......	....
	1900	"	......	Feb. 14	1311.2	....	.....	....	Jan. 4	30.	24.7	Feb. 14	....	2.24	Jan. 4	....	...	3.52	Feb. 14	......	......	....
	1899	Lowest..........	......	June 28	.8	....	.....	....	June 7	4 5	7.	May 24	....	.008	June 7	....	....	.648	Nov. 1	......	......	....
	1900	"	......	Jan. 10	2.8	....	.....	....	Mar. 14	4.2	6 6	Aug. 13	....	.032	May 30, June 6 and 20	....	....	.42	June 20	......	......	....
Mississippi River —Grafton	1899	Average of 33.....	342.4	153.1	189.3	36.1	26.7	9.4	....	2.6	15.89	10.8	5.	.039	.469	.218	.251	1.142	.489	.653	.01	.295
	1900	" " 38.....	365.	151.4	213.6	37.3	23.1	14.2	....	3.5	15.1	8.8	6.3	.111	.465	.216	.249	1.075	.453	.622	.007	.445
	1899	Highest.	......	May 24	958.8	....	.....	....	Oct. 4	6.8	26.9	May 3	....	.184	May 24	....	....	2.65	May 24	......	......	....
	1900	"	......	April 23	1053.2	....	.....	....	Jan. 4	9.5	27.6	April 9	....	.42	Mar. 26	....	....	2.52	April 9	......	......	....
	1899	Lowest..........	......	July 12	12.8	....	.....	....	June 28	1.	8.9	Nov. 1	....	.001	Dec. 13	....	....	.6	Dec. 20	......	......	....
	1900	"	......	Jan. 10	14.	....	.....	....	April 9	1.5	11.2	Jan. 24	....	.012	May 30, June 10	....	....	.616	Sept. 12	......	......	....
Missouri River —West Alton	1899	Average of 23.....	1284.6	285.2	999.4	50.3	17.6	32.7	....	14.9	13.9	4.4	9 5	.03	.475	.102	.373	1.378	.272	1.106	.006	.337
	1900	" " 40.....	1866.6	266.1	1600.5	67.5	19.	18.5	....	16.1	18 6	4.9	13.7	.092	.875	.134	.741	2.279	.325	1.954	.0072	.662
	1899	Highest..........	......	Aug. 2	3290.6	....	.....	....	Nov. 16	30.	31.9	Aug. 2	....	.08	Dec. 28	....	....	3.16	Aug. 2	......	......	....
	1900	"	......	June 24	3917.2	....	.....	....	Jan. 18	35.3	28.7	June 27	....	.22	Mar. 13	...	....	4.96	Mar. 7	......	......	....
	1899	Lowest..........	......	Dec. 28	180.4	....	.....	....	July 27	5.1	6.6	Nov. 30	....	.006	Sept. 28	....	.	.456	Dec. 28	......	......	....
	1900	"	......	Jan. 4	68.	....	.....	...	Aug. 1	7.1	3.9	Jan. 4	....	.016	Apr. 16, June 5	....	....	.36	Jan. 4	......	......	....
Kankakee R. — Wilmington	1899	Average of 29.....	302.7	262.5	39.4	37.8	29 7	5.6	....	3 9	11 1	9.2	1 9	.047	.372	.266	.106	.886	.643	.245	.011	1.084
	1900	" " 34. ..	331.4	259.5	74.9	38.4	31.8	6.6	....	3 3	11.3	8.2	3.1	.073	.371	.251	.12	.892	.567	.325	.014	2.208
Fox River —Ottawa	1899	" " 30.....	341.8	295.8	49.	52.8	46.7	7.4	....	5.84	9.9	8.3	1.7	.056	.416	.27	.146	.94	.556	.384	.008	.373
	1900	" " 34.....	319.2	267.3	51.9	44.6	37.9	6.7	....	5.3	9.6	7.6	2.	.13	.399	.251	.148	.816	.491	.325	.008	.416
Big Vermillion River, La Salle	1899	" " 32.....	1023.1	992.8	30.3	91.5	83.4	8.1	....	64.9	6.4	4.9	1.5	.254	.244	.159	.085	.639	.406	.213	.022	.845
	1900	" " 40.....	480.7	409.8	70.9	52 3	42 8	9.5	....	16.4	7.3	4.8	2.5	.112	.259	.146	.113	.595	.314	.281	.018	3.522
Sangamon R.. Chandlerville	1899	" " 23.....	351.1	280.9	70.2	40.5	30.	10.5	....	5 6	7.3	5.	2.3	.115	.262	.154	.108	.72	.38	.34	.043	.62
	1900	" " 33.....	397.7	255.	142.7	39.4	28.3	11.1	....	5.	9.9	4 7	5.2	.107	.327	.146	.181	.783	.329	.454	.021	1.84
Illinois River —Grafton	1899	" " 34.....	349.5	271.7	71.8	38.7	29.7	9.	....	18 5	9.9	7.8	2.1	.221	.412	.247	.165	1.037	.609	.428	.051	1.07
	1900	" " 39.....	438.6	229.1	209.5	38.5	27.3	11.2	....	12.17	10.9	6.6	4.3	.37	.403	.205	.198	.931	.478	.453	.024	1.362

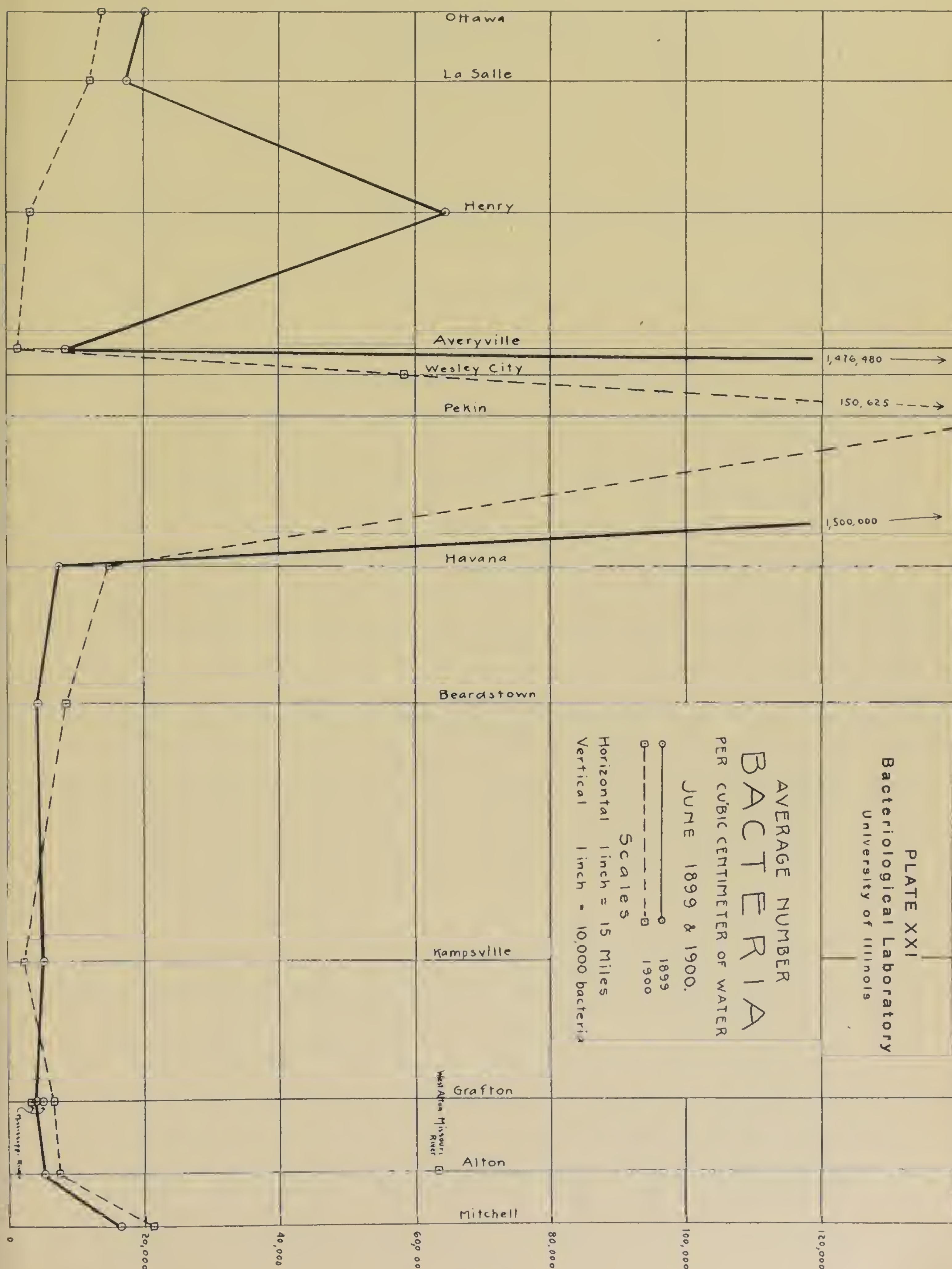


PLATE XXI
Bacteriological Laboratory
University of Illinois
AVERAGE NUMBER
BACTERIA
PER CUBIC CENTIMETER OF WATER
JUNE 1899 & 1900.
1899
1900
Scales
Horizontal 1 inch = 15 Miles
Vertical 1 inch = 10,000 bacteria
Ottawa
La Salle
Henry
Averyville
Wesley City
Pekin
Havana
Beardstown
Kampsville
Grafton
Alton
Mitchell
West Alton Missouri River
1,476,480
150,625
1,500,000
0
20,000
40,000
60,000
80,000
100,000
120,000
140,000

REPORT OF THE UNIVERSITY OF ILLINOIS.

BY

PROFESSOR T. J. BURRILL, Ph. D

THE EXTENT OF THE WORK.

The work herein reported covered the period from June 1, 1899, to October 15, 1900. During this time 2,800 samples of water were received from the collecting stations named below. The samples were usually taken once a week from each station, but from January 30 to April 30, 1900, daily collections were made from the Illinois River at Grafton, Ill., and three times a week from the Illinois and Mississippi rivers at Grafton, and from the latter near Mitchell, from July 9, to October 15, 1900. From each of these 2,800 samples at least duplicate cultural tests were made for the number of bacteria present, and frequently others were made for the purpose of comparison in different culture media or under conditions varying from the usual method, aggregating, all told, about 7,000 cultures for colony counts. Further tests were made in case of most of the samples to determine the presence or absence of *Bacillus coli-communis* or the group of organisms commonly associated under that name. In these from two to five series of tests were made for each sample, each usually having five distinct processes requiring skillful manipulation and discriminating judgment. Thus for the 2,800 samples there have been some 30,000 cultures and as many entries of the results.

THE PURPOSES OF THE INVESTIGATIONS.

The objects in all this were to ascertain the number of bacteria existing in the water at different times at the different collecting stations located at favorable points throughout the course of the drainage waters from Chicago to St. Louis, to determine as far as possible the facts in regard to the sources of contamination of these waters, and those in regard to natural purification, as well as to gather data showing the distribution in the waters of special kinds of bacteria associated with certain diseases of human beings. It was, in a word, to show what effects the sewage of Chicago has upon the stream throughout its course for 368 miles.

It should be noted that the work began in the early summer of 1899, eight months before the water was permitted to pass through the Sanitary Canal then in process of construction, and continued nine months after this great waterway was opened. Comparisons for the months of June, July and August for the two years, 1899 and 1900, before and after the opening of the Sanitary Canal, are especially noteworthy and are abundantly presented hereafter.

In order to determine in a general way the contaminations reaching the waters of the Illinois river besides such as came from the city of Chicago, samples were continuously collected from the Kankakee river at Wilmington, from the Fox river at Ottawa, from the Big Vermilion river near LaSalle, and from the Sangamon river near Chandlersville. All of these streams, with other tributaries of the Illinois river, receive the sewage of large aggregate populations and must have considerable effect upon the character of the water into which they discharge. For further comparative studies collections were also made from the Mississippi river above the entrance of the Illinois at Grafton and from the Missouri river at West Alton, and as incidental to the main work in hand, analyses are reported of regularly collected samples of Chicago and St. Louis tap waters.

COLLECTING STATIONS AND SHIPMENTS.

The collecting stations were selected and the methods of taking and shipping the samples for chemical and for bacteriological analyses were determined conjointly by Professor Arthur W. Palmer of the University of Illinois and Professor Edwin O. Jordan of the University of Chicago, as elsewhere described by them in this volume. For ready reference, those on the course of the stream, with their approximate distances from the pumping station at Bridgeport, Chicago, are here named in order of their occurrence:

Lockport, Michigan Canal, Desplaines river, and Sanitary Canal, 29 miles.
Joliet, Jackson street, Desplaines river, 33 miles.
Joliet, Rock Island Bridge, Desplaines river, 36 miles.
Morris, Illinois river ($9\frac{1}{2}$ miles below union of Kankakee and Desplaines), 57 miles.
Ottawa, Illinois river, 81 miles.
La Salle, Illinois river, and Illinois and Michigan Canal, 95 miles.
Henry, Illinois river, 123 miles.
Averyville (North Peoria), Illinois river, 159 miles.
Wesley City, Illinois river (4 miles below Peoria), 165 miles.
Pekin, Illinois river, 175 miles.
Havana, Illinois river, 199 miles.
Beardstown, Illinois river, 231 miles.
Kampsville, Illinois river, 288 miles.
Grafton, Illinois river, 318 miles.
Grafton, Mississippi river.
Alton, Mississippi river, 400 feet from Illinois shore, 333 miles.
Alton, Mississippi river, $\frac{1}{4}$ width from Illinois shore.
Alton, Mississippi river, center of stream.

Alton, Mississippi river, ¼ width from Missouri shore.
Alton, Mississippi river, 400 feet from Missouri shore.
Mitchell, Mississippi river, 400 feet from Illinois shore, 348 miles.
Mitchell, Mississippi river, center of stream.
Mitchell, Mississippi river, St. Louis Inlet Tower.
Mitchell, Mississippi river, 400 feet from Missouri shore.
West Alton, Missouri river.
Jefferson Barracks, Mississippi river, 400 feet from Illinois shore, 368 miles.
Jefferson Barracks, Mississippi river, ¼ width from Illinois shore.
Jefferson Barracks, Mississippi river, center of stream.
Jefferson Barracks, Mississippi river, ¼ width from Missouri shore.
Jefferson Barracks, Mississippi river, 400 feet from Missouri shore.
Chicago tap water.
St. Louis tap water.

The samples were taken at these stations according to strict instructions, packed in ice, and forwarded to the laboratory as speedily as possible. Further description of these processes is not given, because a full account has been made by others in this report. It should be said, however, that notwithstanding the great pains taken to prevent unnecessary delays, these sometimes occurred, and the samples were not received in good condition. At first, before collectors and express agents came to understand the necessities in the case, there was much trouble of this kind, though subsequently little complaint could be made. The figures for May, 1899, are not included on account of errors due to the causes just referred to.

Throughout the entire period, however, the method of sending samples for plating was, under the best possible conditions which could be devised, an unsatisfactory substitute for work upon the spot and at the instant collections were made. It is a fact that in case of most of the waters examined the numbers of bacteria had been at a maximum some time previous to the date of collecting, that the water had been in most cases undergoing the natural processes of purification, with an accompanying diminution of the number of living bacteria. When, therefore, the conditions were made unfavorable for the multiplication of bacteria, as by the want of aeration and low temperature, the rate of diminution was necessarily greater. Hence transported samples ordinarily gave a less number of colonies in the culture dishes than plating direct from the water at the collecting station would have shown. On the other hand, some special species, well adapted to the new conditions, undoubtedly did multiply rapidly in the water after it was enclosed in the collecting bottles. This sort of increase must have been more striking as the length of time was increased, because these special kinds were freed from the competition of the others. Any water rich in fresh organic matter would also offer an opportunity for notable increase in the bacteriological contents, especially under favorable conditions, during 24 or more hours in a collecting bottle. Thus, while our numbers are commonly less, they are sometimes presumably greater than place-plating would have shown.

For these reasons, as well as for variations always encountered in work of this kind, the figures herewith reported must be considered approximate ones only, but the errors are not believed to be sufficiently

serious to affect the comparative results. In a very few instances counts widely deviating from those commonly obtained from given samples have been thrown out in preparing the tables, but in no case have numbers been otherwise modified. The figures are reported just as they were entered in the laboratory books.

PLATING FOR COLONY COUNTS.

Nutrient agar-agar was chosen instead of gelatin, more commonly used for colony counts, because upon the whole the former was believed to be the better adapted to the particular work in hand under the special conditions existing. It is true that more bacteria commonly develop in gelatin, but it is gravely questioned that better comparative results can ever be obtained by the use of this medium in the study of such waters as were here dealt with. The fact that liquefaction often takes place through the energetic action of some rapidly developing species before the slower growing kinds have grown sufficiently to be visible, and therefore before a proper count can be made, is in itself a very serious drawback to the use of gelatin. With it there can be less uniformity in the length of time allowed for the plates to develop before counting, hence there is a kind of irregularity introduced, due in part to the particular species or association of species one happens to have to deal with in a particular plate, which are not the same in another plate used for comparison. Anything which compels the laboratory employee to watch the progress of individual cultures and to modify his own action in accordance therewith tends to defeat the comparisons for which alone his work is valuable. It is impossible ordinarily, under the best conditions, to leave a gelatin plate more than four days before counting, often not more than half this length of time. The slower growing species may not appear at all within these limits, while others are destroying the plate by liquefaction. In the case of agar the growth is commonly less rapid, but after a colony is once formed it does not disappear except by indefinitely spreading, and even those overrun can often be seen at the end of a chosen uniform period of sufficient length to permit the best development for counting. As uniformity of results means in this work much more than a maximum growth from one or more samples, nutrient agar has claims for consideration aside from convenience of handling in hot weather.

The plating agar was made from butchers' meat with Witte's peptone, titrated against sodium hydroxide to the phenolphthalein neutral point, and brought by means of hydrochloric acid to 10 on Fuller's scale. Care was taken to have the medium several weeks old before use, as a means of avoiding spreading growths, and to secure better pouring quality. The prepared plates were kept in a basement room of a large building, where the temperature was practically constant at 20° C. This was found to be much more satisfactory than keeping the cultures in a box with a constant temperature maintained by running water. The plates were uniformly counted after a development period of ten days. When

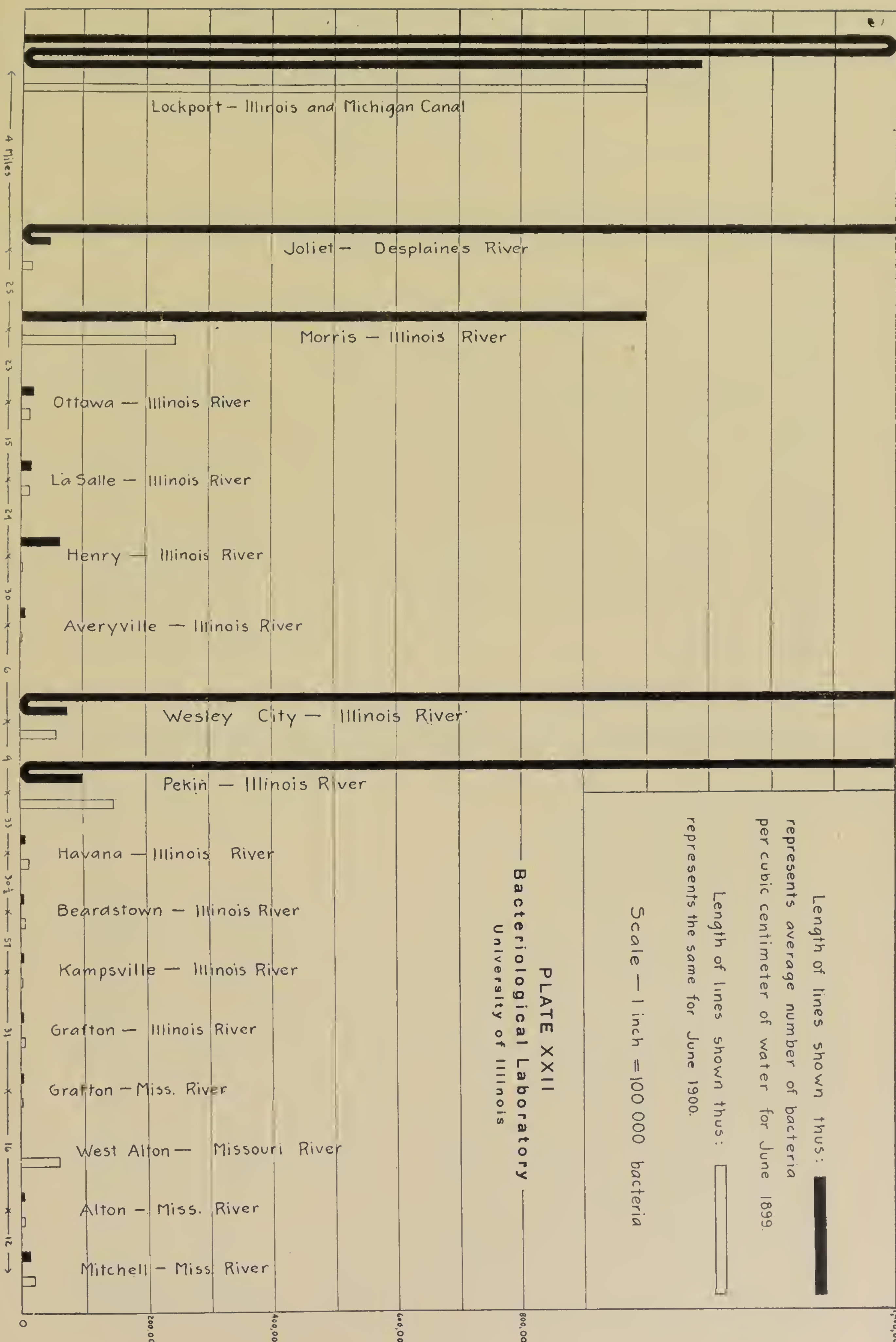


PLATE XXII
Bacteriological Laboratory
University of Illinois

helpful a lens was used in counting. Such dilutions were made of the water as were found by repeated trials necessary to secure from 50 to 100 colonies upon a Petrie dish 100 mm. in diameter.

BACILLUS COLI-COMMUNIS.

Much attention was given to the so-called colon group of bacteria. This investigation was undertaken with a realizing sense of the difficulties sure to be encountered in obtaining trustworthy results and of the care needful to avoid serious errors. In the first place, much variation is known to occur in cultures, and in the characteristics relied upon for identification, due to the special type in hand, whether or not these variations are considered to be of specific value when found reasonably permanent and sufficiently recognizable under variations of conditions. Then the previous history of the special organisms dealt with and the immediate conditions of growth lead to much difference in results. From inherent peculiarities and from external causes combined the investigator must anticipate considerable departure from any standard adopted for the characterization of this colon organism or organisms. It is, however, a matter of the greatest importance in such studies as this that the meaning expressed by figures in reports shall be clearly interpretable and open to critical review. With this in view, the processes made use of for the identifications reported are here described in considerable detail.

After some preliminary changes in methods a routine of procedure was adopted and afterward adhered to as follows:

(1) One cubic centimeter of the water to be examined was placed in each of at least two tubes containing a culture medium made up of:

5 grms. Liebig's meat extract.
10 grms. chemically pure lactose.
1 grm. pure carbolic acid crystals.
1,000 cc. distilled water.
Litmus, aqueous solution sufficient to color.

These were incubated at about 38° C. for 48 hours. If the color remained unchanged a negative result was at once interpreted, since the conditions were favorable for the growth of the organism in question and though very few were originally contained in the water, multiplication would rapidly take place, while the restraining influences of the carbolic acid and the temperature would keep in check the ordinary bacteria. In the presence of sugar, colon bacteria produce acid, and this is quickly indicated by the litmus. If one or both the tubes became red separation cultures were made in nutrient gelatin containing lactose and litmus as in the medium just described. Indications of the colonies of the organism were supposed to be given by the change of color in the immediate vicinity, and selections were then made by the other characteristics for pure cultures. These were made in sugar-free and in 2% glucose broth—the former for indol tests and the latter for gas in the fermentation tube and in litmus milk.

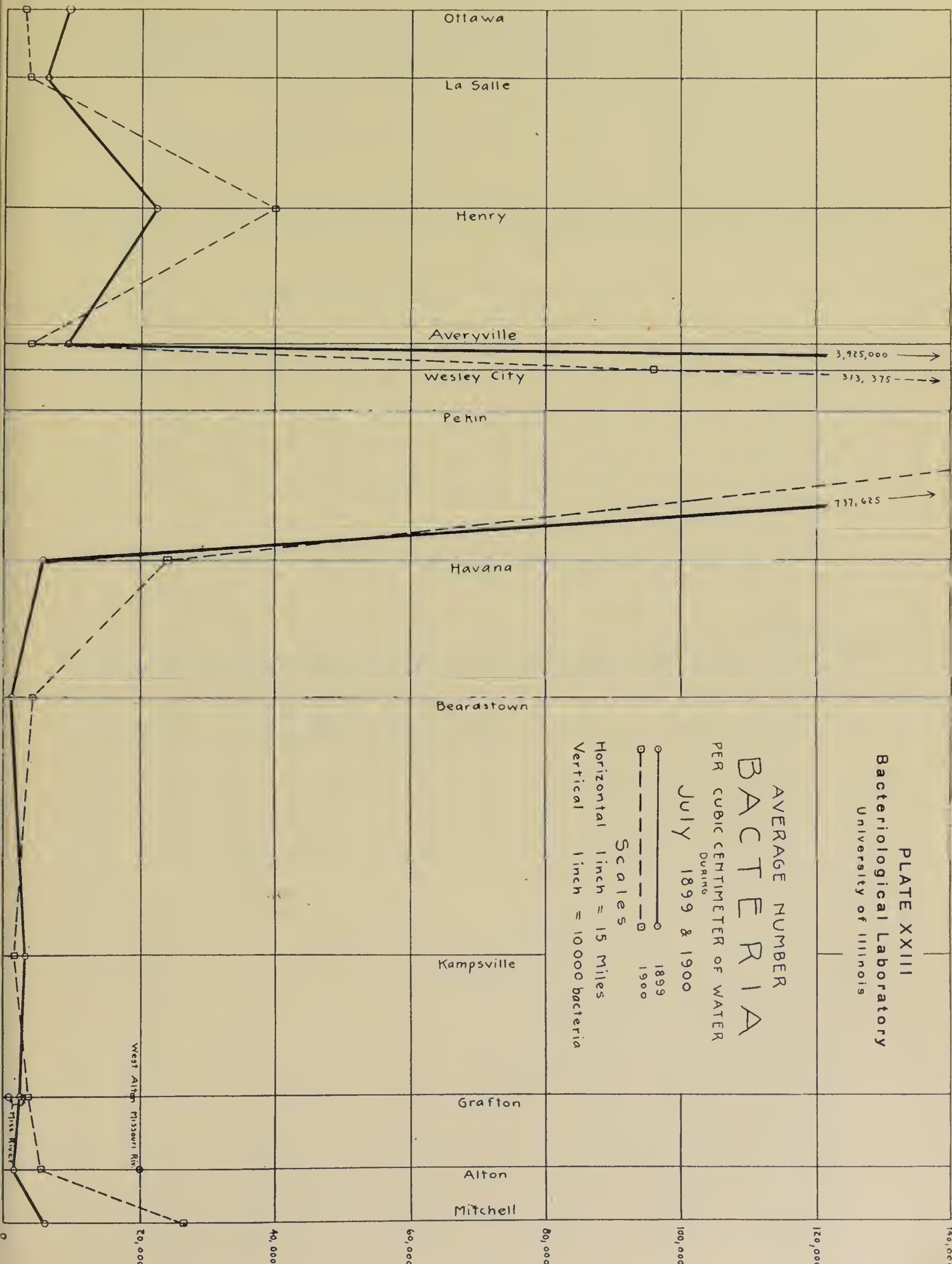


PLATE XXIII
Bacteriological Laboratory
University of Illinois
AVERAGE NUMBER
BACTERIA
PER CUBIC CENTIMETER OF WATER
DURING
July 1899 & 1900
1899
1900
Scales
Horizontal 1 inch = 15 Miles
Vertical 1 inch = 10000 bacteria
Ottawa
La Salle
Henry
Averyville
Wesley City
Pekin
Havana
Beardstown
Kampsville
Grafton
Alton
Mitchell
West Alton Missouri Riv.
Miss River
3,925,000
313, 375
737, 625
0
20,000
40,000
60,000
80,000
100,000
120,000

Sterile meat infusion was made sugar-free by inoculating with typical *Bacillus coli-communis* and incubating for 14 to 16 hours. It was then boiled, filtered, and sterilized in tubes. Cultures for indol tests were incubated 36 to 48 hours, after which about 1 cc. of .04% solution of sodium nitrite and 4 to 6 drops of concentrated sulphuric acid were added. If the red color did not immediately appear after shaking, the tubes were left for a time in the incubator.

In the fermentation tubes 30 to 60 per cent of gas was considered indicative of the colon bacillus, but in practice a positive record was made if all other tests were favorable, even though within somewhat varied limits a greater or less amount of gas appeared. The upper limit was, however, rarely surpassed when other characteristics agreed in indicating the colon bacillus. The lower limit proved more variable, due perhaps to the varietal peculiarity of the organism or to its immediately preceding history.

When all of the tests could be undoubtedly interpreted as showing the presence of the colon bacillus a positive record was entered; when some of them clearly failed and further trials resulted in the same way, a negative entry was made. If, however, as sometimes happened, the tests were contradictory or uncertain, the record was made to show this condition of things. In the tables following the signs + and — show the presence or absence respectively as thus ascertained of the organism or organisms in question, and an interrogation point indicates doubtful results.

No animals were inoculated to test the pathogenic properties of any isolated organisms. This was impracticable upon the scale upon which the work was done. Further, there was little to be gained by the process. The contaminations of these waters by germs pathogenic to man are presumably confined to those producing intestinal disorders, and these show very great variability in regard to virulence to animals widely different from their effects upon man. For instance, no added information would be probably gained in regard to the distribution of *Bacillus typhosus* by inoculating animals with cultures derived from the waters under examination.

RESULTS IN REGARD TO THE NUMBERS OF BACTERIA.

A glance at the tabular exhibits presented herewith, and better by the graphical showing, reveals at once the very striking differences which exist in the bacterial content of these waters in the different portions of the stream. There is everywhere much variation for which there are several well recognized causes. There are seasonal differences to which attention is further to be called; there are changes determined by rains and the wash from the shores of the main channel and of the entire tributary systems, and these, of course, are irregular in time and variable in extent. There are also changes brought about by artificial processes of such nature that the stream received at one time more than another decomposable matter, as the wastes from manufactories and

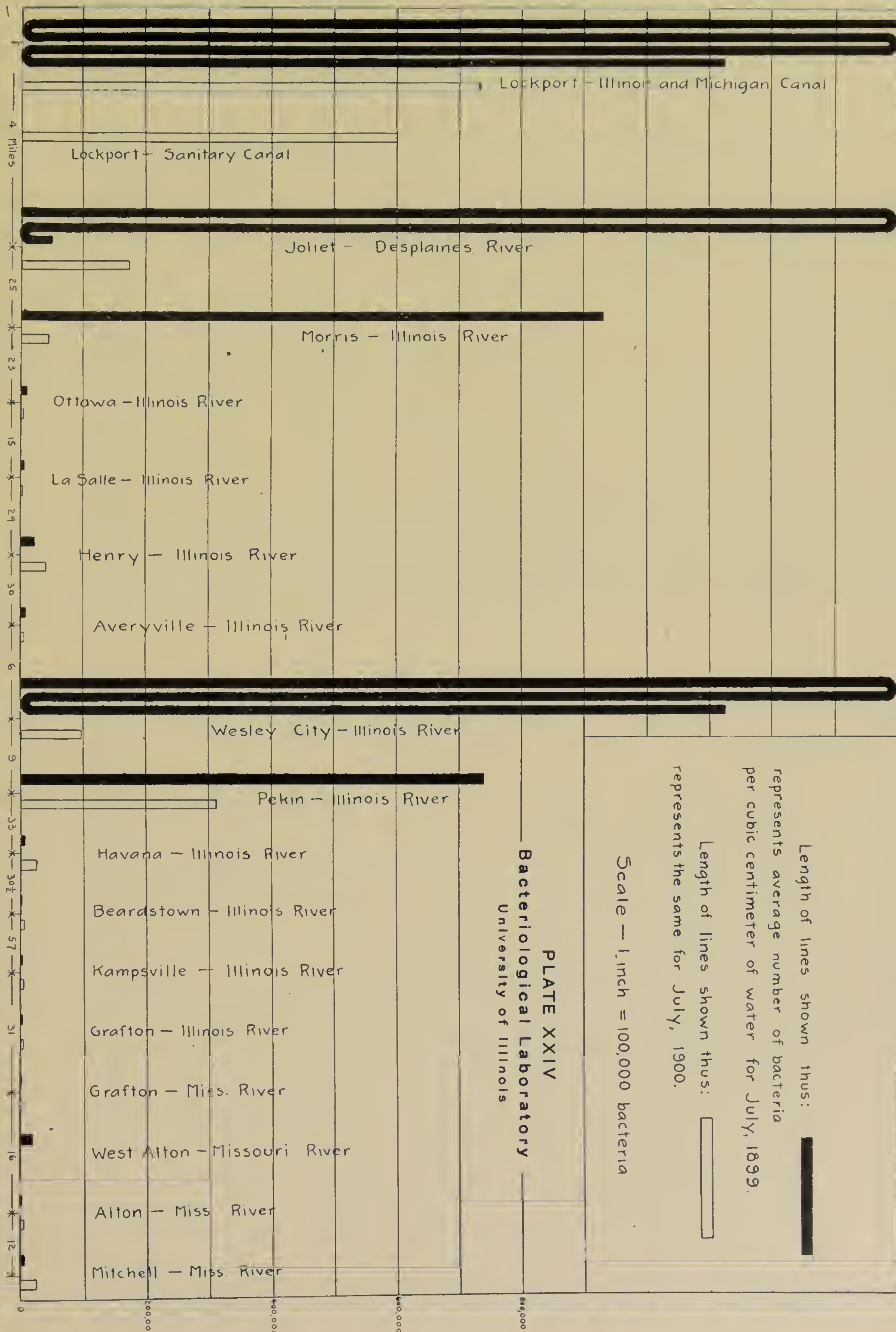


PLATE XXIV
Bacteriological Laboratory
University of Illinois

the offal from stockyards. But in spite of any such variations the numbers of bacteria are always enormous at Bridgeport and at other headwater stations. They decrease with marked regularity as one follows down stream to Peoria. The place called Averyville is just above this city, where the pumping works are located by which the place is supplied with water. This is 159 miles from Bridgeport, the other pumping station operated for the disposal of the sewage of the city of Chicago. Taking, for example, the number of bacteria per cubic centimeter in the water at these places during November, 1899, and April, 1900, our analyses gave the following figures:

	Nov. 7.	Nov. 15.	Nov. 21.	Nov. 29.	Average.
Bridgeport	4,790,000	1,960,000	3,920,000	315,000	2,497,000
Averyville	550	1,100	1,200	2,800	1,640
	April 3.	April 10.	April 17.	April 25.	Average.
Bridgeport	5,300,000	3,725,000	11,200,000	3,925,000	6,037,500
Averyville	28,000	17,000	5,500	1,850	13,087

The river receives great quantities of polluting matter as sewage and other refuse from the cities of Peoria and Pekin, and the numbers of bacteria again very greatly increase, followed as before by a notable decrease further down stream. Beardstown is 56 miles south of Pekin. A comparison of results obtained from these two places illustrates again the self-purification of the flowing water:

	Nov. 1.	Nov. 9.	Nov. 16.	Nov. 24.	Average.
Pekin	2,780,000	170,000	145,000	95,000	797,500
Beardstown	6,500	21,500	7,150	35,200	17,590
	July 6.	July 12.	July 19.	July 26.	Average.
Pekin	38,500	555,000	370,000	220,000	295,875
Beardstown	3,500	4,000	3,000	6,000	4,125

The dates vary by one day in some of these cases in regard to one of the parts of the couples from those on which the tests were made, but this does not affect the lesson gathered by the comparison. The averages in the last set of figures show respectively 45 and 71 times as many bacteria in the water at Pekin as at Beardstown, though the distance is but 56 miles and the time required for the water to flow from the former to the latter place is not more than 24 hours.

The kind of information gained from the figures just quoted can be much more satisfactorily obtained by a study of the graphic presentations in plates XXI to XXVIII, inclusive. These cover the collections made during June, July, August and September of the years 1899 and 1900, the corresponding portion of the two years upon which collections were made. The data upon which the plates are constructed come from the averages of all the counts made during the month indicated in each case. These particular months were chosen because they were the ones, and the only ones, during which the work was in progress both years covered by this report, and the comparative annual studies are important as will be shown later. The counts for other months of the year would have given similar exhibits though subject to seasonal variations. The two plates for each month are only different methods of presenting to the

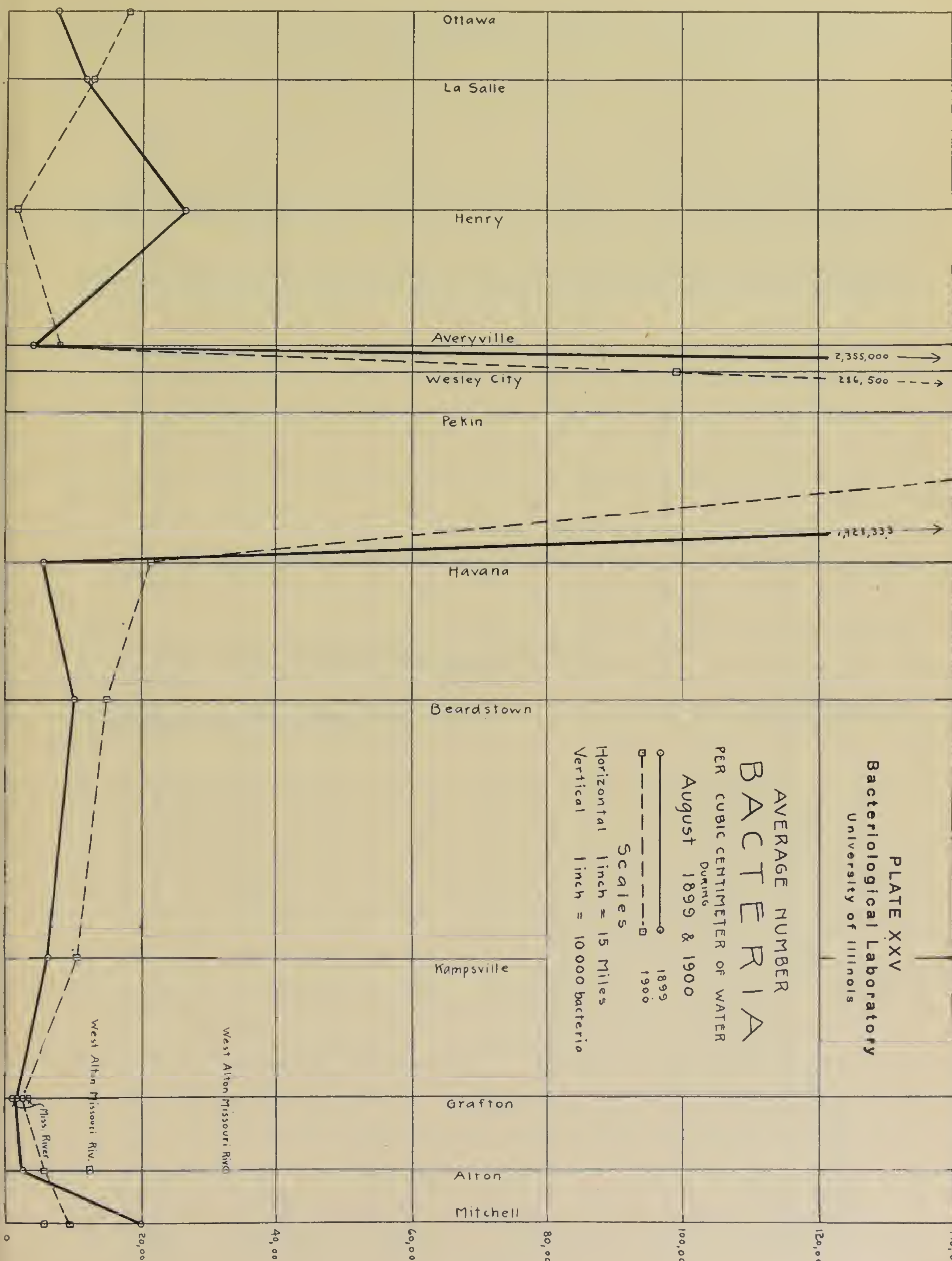


PLATE XXV
Bacteriological Laboratory
University of Illinois
AVERAGE NUMBER
BACTERIA
PER CUBIC CENTIMETER OF WATER
DURING
August 1899 & 1900
1899
1900
Scales
Horizontal 1 inch = 15 Miles
Vertical 1 inch = 10 000 bacteria
Ottawa
La Salle
Henry
Averyville
Wesley City
Pekin
Havana
Beardstown
Kampsville
Grafton
Alton
Mitchell
2,355,000
286,500
1,928,333
West Alton Missouri Riv.
West Alton Missouri Riv.
Miss. River
0
20,000
40,000
60,000
80,000
100,000
120,000
140,000

eye the same information; but those with connected, oblique lines do not reach northward or up stream above Ottawa, because of the difficulty of representing the larger counts on a scale suitable for the smaller ones. This difficulty is met in the plates with vertical lines by doubling the long ones upon themselves; those representing the counts for 1899 being heavy or solid and those for 1900 of lighter and open construction. On these plates the distances in miles from one station to that next succeeding are given along the bottom.

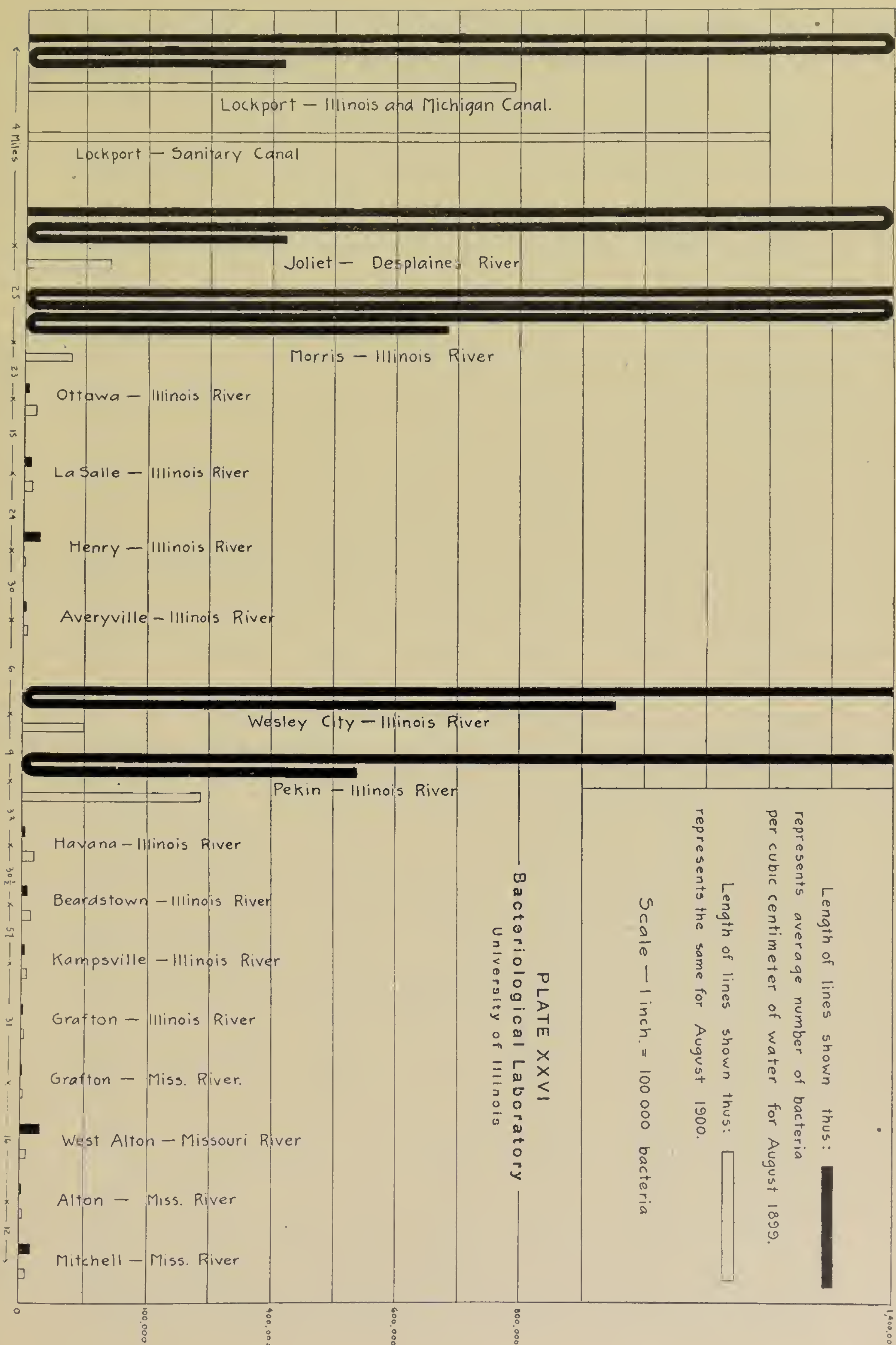
The story graphically told upon the plates is the same for each of the four months for either year. It is for 1899 (the heavy or whole lines): (1) the enormous initial numbers represented by the long lines reaching two to four times the vertical width of the plates, (2) the phenomenal decrease between Morris and Ottawa and the surprisingly low showing through to Averyville, (3) the sudden and great increase at Wesley City and Pekin, and (4) the marvelous drop at Havana and onward. In all this the data for the four months give in effect the same exhibit in all of the cases; though September stands somewhat by itself. For this month, Lockport, Joliet, Wesley City and Pekin have much shorter or lower lines than usual, indicating that the numbers of bacteria in the samples taken at these places were much less during this month than usual or than were found for the other three months. In this connection the following figures, showing the counts for these places from August to December, 1899, inclusive, are of interest:

	Lockport. Ill. and M. Canal	Joliet.	Wesley City.	Pekin.
August	3,215,000	3,220,000	2,355,000	1,928,000
September	669,600	217,000	484,500	391,250
October	1,359,375	1,145,000	2,373,750	1,047,500
November	582,000	1,023,000	705,000	812,000
December	746,250	1,026,250	20,600	69,000

The numbers are all very large. The variation usually is not more than is ordinarily anticipated, except those for December at Wesley City and at Pekin. These, compared with the others given and with those usual for these stations, are very exceptional and must have some special explanation. Upon the latter, however, it is idle to speculate. Let it be remembered that there is no connection between the first two sets of figures and the last two sets, for Joliet and Wesley City are separated by a long line of the waterway, from which the samples show very low counts.

The main lesson in this respect offered by the tables is so important that another set of figures may be given for comparison with those just presented. The Ottawa station is 48 miles from that of Joliet, and Averyville is 74 miles from Ottawa. Havana is 33 miles from Pekin and Kampsville is 81 miles from Havana. The average counts for these places for the same time as above were as herewith given:

	Ottawa.	Averyville.	Havana.	Kampsville
August	7,500	4,000	5,700	6,200
September	40,100	3,100	6,137	3,480
October	33,050	3,770	12,430	1,717
November	24,750	2,800	164,000	6,850
December	264,760	9,300	301,300	28,850



Lockport — Illinois and Michigan Canal.
Lockport — Sanitary Canal
Joliet — Desplaines River
Morris — Illinois River
Ottawa — Illinois River
La Salle — Illinois River
Henry — Illinois River
Averyville — Illinois River
Wesley City — Illinois River
Pekin — Illinois River
Havana — Illinois River
Beardstown — Illinois River
Kampsville — Illinois River
Grafton — Illinois River
Grafton — Miss. River.
West Alton — Missouri River
Alton — Miss. River
Mitchell — Miss. River
Length of lines shown thus: represents average number of bacteria per cubic centimeter of water for August 1899.
Length of lines shown thus: represents the same for August 1900.
Scale — 1 inch. = 100 000 bacteria
PLATE XXVI
Bacteriological Laboratory
University of Illinois
0
400,000
600,000
800,000
1,400,000

From Joliet to Ottawa in August the number drops from 3,220,000 to 7,500 and in November from 1,023,000 to 24,750. From Pekin to Havana in August the decrease is from 1,928,000 to 5,700, and in October from 1,047,000 to 12,430. In general the figures in this last set are decidedly less than those of the first set. And let it be noticed those from Averyville are less than those from Kampsville, the average of the former being 4,614, and of the latter 9,420. This is not always the case, as is shown by the graphical plates, but the fact is emphasized that the pollutions of the headwaters near Chicago have very largely disappeared at Averyville. The Kampsville water would certainly have been still better but for the new contaminations at Peoria and Pekin.

It is worth while to ask attention to the results indicated on these plates concerning the relative numbers of bacteria in the water of the Illinois river at its mouth and the Mississippi river before it receives the Illinois. Both these collecting stations are marked Grafton. Appealing to the charts with connecting oblique lines, XXI, XXIII, XXV and XXVII, it is seen that the Mississippi has a slightly less number for June of both years, and the same is true for July both years; for August it is the same for 1899, but the reverse for 1900, while for September the relation stated holds for 1900, but in 1899 the Illinois has fewer bacteria. In every case the numbers as found in the samples from West Alton on the Missouri river are considerably above those of either the Illinois or the Mississippi at Grafton. The zigzag lines of the plates usually tend upward for some cause to Alton, where the samples were taken from the mixed waters of the Mississippi and the Illinois rivers but above the mouth of the Missouri, and the upward slant of these lines from Alton to Mitchell not only always occurs, but is considerable for each month shown. At Mitchell the waters of the Mississippi and Missouri have become mingled, and our exhibit is based upon the average number of bacteria found in five samples taken at somewhat equal intervals on a line across the combined stream. The increase in number of bacteria from Alton to Mitchell is apparantly explained by the greater number in the Missouri, as shown by the samples from West Alton.

For the sake of further comparison in regard to the waters of the Illinois river at its mouth and those of the Missouri at West Alton, it may be well to bring together the monthly averages for the entire time over which this report extends. For 1899 they are as follows:

	June.	July.	August	September.	October.	November.	Dec.
Illnois	4,155	2,628	1,804	793	743	7,200	40,350
Missouri		20,000	32,700	23,400	16,400	28,500	10,500

For 1900 the records, when averaged for each month, give the following numbers:

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.
Illinois	46,600	191,500	159,500	11,550	6,850	6,850	3,900	2,700	5,270
Missouri	84,960	40,030	179,750	77,000	66,200	63,370	30,170	12,450	25,200

It will be seen that only in two cases are the numbers greater for the Illinois river—the numbers of December, 1899, and January,

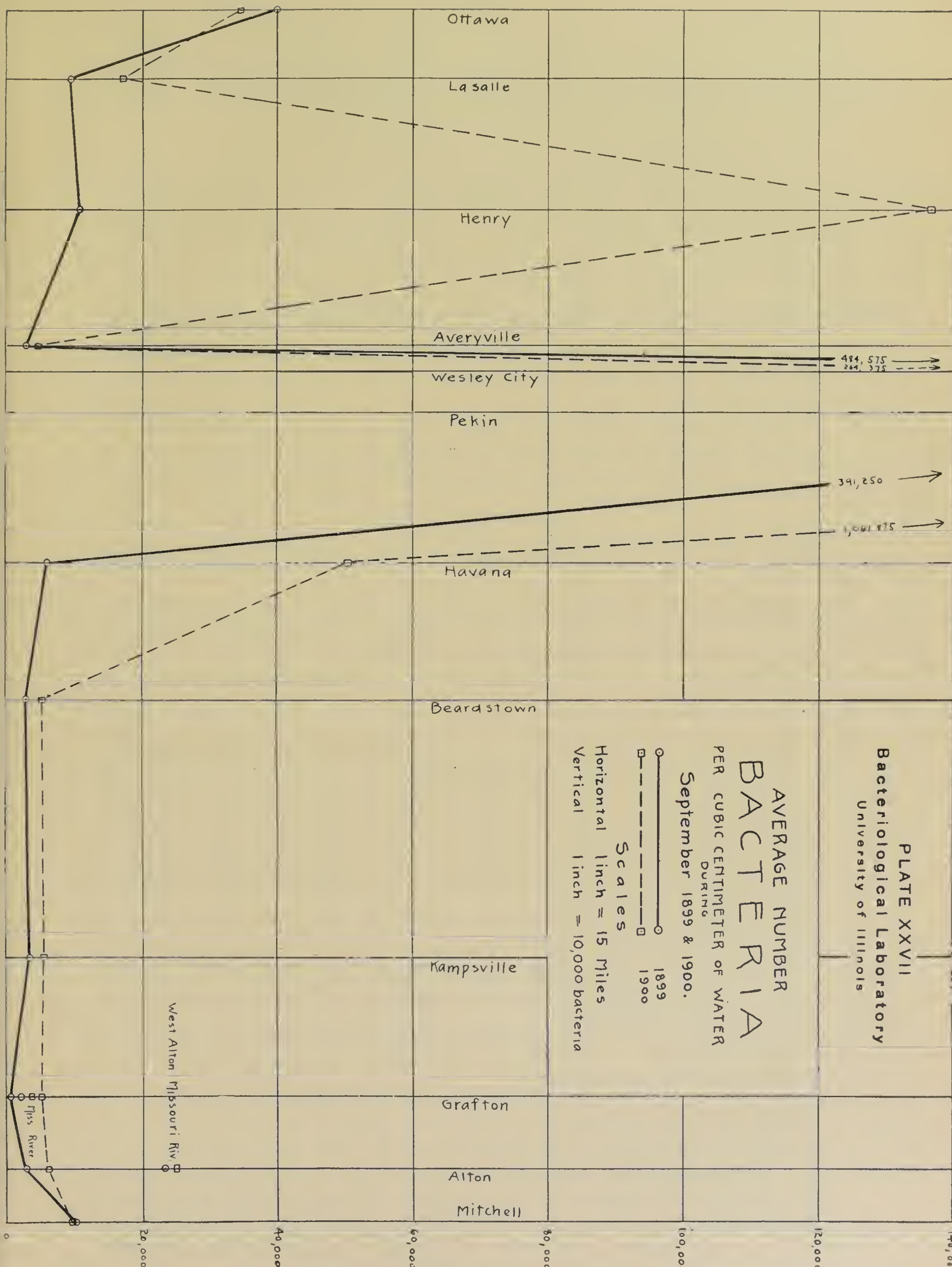


PLATE XXVII
Bacteriological Laboratory
University of Illinois
AVERAGE NUMBER
BACTERIA
PER CUBIC CENTIMETER OF WATER
DURING
September 1899 & 1900.
1899
1900
Scales
Horizontal 1 inch = 15 Miles
Vertical 1 inch = 10,000 bacteria
Ottawa
Lasalle
Henry
Averyville
Wesley City
Pekin
Havana
Beardstown
Kampsville
Grafton
Alton
Mitchell
484,575
391,250
West Alton
Missouri Riv.
Miss River
0
20,000
40,000
60,000
80,000
100,000
120,000
140,000

1900. Otherwise the counts from the waters of the Missouri are largely in excess—from twice to more than ten times those from the Illinois. From what has gone before it is plain that about the same relation holds between the number of bacteria in the waters of the Missouri river at West Alton and those of the Mississippi at Grafton.

The waters of the tributaries examined do not, upon the whole, show so many bacteria per cubic centimeter as are found in the Illinois river near the meeting place of these waters. The Kankakee joins the Desplaines between Joliet and Morris. The samples taken at these two stations proved to have many times the number of bacteria of those from the Kankakee at Wilmington. This is not unexpected, for the waters at the former places are very highly polluted. From the Kankakee from 2,000 to 5,000 bacteria per cubic centimeter were usually found during the summer months and from 25,000 to 100,000, or above, from the Illinois at Morris.

The monthly averages for June, July and August of 1899, and for January, March and April, 1900 (no collections from the Fox in February) from the Fox and Illinois rivers at Ottawa are as follows:

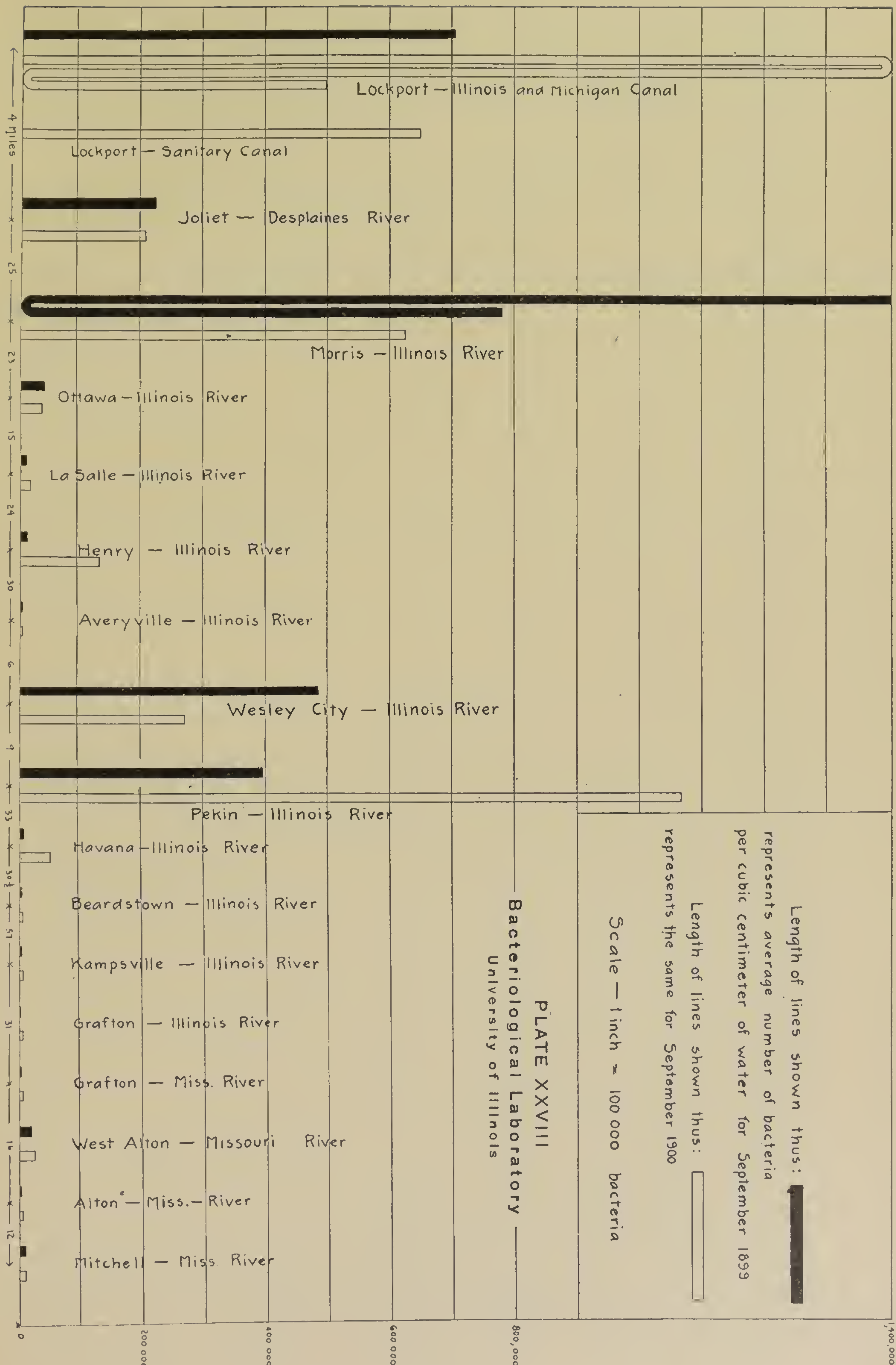
	June.	July.	August.	January.	March.	April.
Fox	11,000	3,070	4,560	12,275	84,160	49,250
Illinois	20,550	9,300	7,500	256,250	116.750	68,500

The numbers from the Big Vermilion and the Illinois rivers at La Salle show essentially the same proportions as the above, and those from the Sangamon at Chandlersville and the Illinois at Beardstown are not far different.

VARIATION IN NUMBERS OF BACTERIA FOLLOWING THE SEASONS.

Any inspection of the figures presented must quickly make evident that the numbers of bacteria found in any given place vary greatly according to the season of the year. This is more pronounced at considerable distance from the source of pollution, and is readily explained, though at first it might be thought the natural tendency would be directly opposite the order shown in these studies. Consult, for instance, the last column in tables 57, 58 and 59, showing results from Chandlersville, Beardstown and Kampsville. Here the largest counts are for the winter months, and the difference is very great. The average of the counts as given on table 58 for Beardstown for January, February and March, is 268,600, while for June, July, August and September it is 8,100. Table 68, occupying four pages, shows the seasonal variation for the Illinois river at Grafton in a still more instructive manner with the largest numbers when the temperature of the water is the lowest.

What causes this remarkable difference? If we turn to tables 1 and 40, showing the numbers of bacteria in the Illinois and Michigan Canal at Bridgeport, no such variations will be found. At Jackson street, Joliet, table 4, the counts average for June, July, August and September


Lockport — Illinois and Michigan Canal
Lockport — Sanitary Canal
Joliet — Desplaines River
Morris — Illinois River
Ottawa — Illinois River
La Salle — Illinois River
Henry — Illinois River
Averyville — Illinois River
Wesley City — Illinois River
Pekin — Illinois River
Havana — Illinois River
Beardstown — Illinois River
Kampsville — Illinois River
Grafton — Illinois River
Grafton — Miss. River
West Alton — Missouri River
Alton — Miss. — River
Mitchell — Miss. River
Length of lines shown thus: represents average number of bacteria per cubic centimeter of water for September 1899
Length of lines shown thus: represents the same for September 1900
Scale — 1 inch = 100 000 bacteria
PLATE XXVIII
Bacteriological Laboratory
University of Illinois
0
200 000
400 000
600 000
800,000
1,400,000
4 miles
25
23
15
24
30
6
9
33
30½
51
31
14
12

2,459,400, but for November and December the average is 1,067,500, showing the greater numbers when the water temperatures are very high. This is no contradiction. The fact is the numbers of bacteria are small during warm weather at a distance from the source of pollution *because* the numbers are then large at this source. In other words, the ordinary purification of water contaminated with organic, fermentable matter, is largely due to the fermentive action of the bacteria themselves, and they are short lived. When the conditions are favorable for their rapid multiplication they more quickly dispose of the contaminating matter, and when their food is gone they perish. The lower waters contain fewer bacteria in warm weather because the organic substances are destroyed in the upper portions of the stream by the great numbers of bacteria there existing and working. When, however, this activity is less in the headwaters the fermentable material is carried farther along by the current, and the bacterial development similarly extends farther down stream. A barrel full of rain water becomes foul sooner in warm weather, but it also then purifies itself quicker. The bacteria multiply faster, hence become more numerous for a certain length of time, but they subsequently become fewer as a direct cause of this early development.

COMPARATIVE NUMBERS OF BACTERIA IN 1899 AND 1900.

The chief interest in this comparison lies in the fact that the Sanitary Canal was opened in the early part of the latter year. What effect has the larger intake of water from the lake had upon the bacterial content of the stream in any part of its course? We have just seen that an answer to this question cannot be had by comparing the counts of different seasons of the year. It cannot, indeed, be said that any difference noted for the same season in different years is due to any one cause, or in this case that the opening of the canal made all the variation observed between the results of the corresponding months of June, July, August and September of these two years. It is, however, plainly evident from a study of the figures that the increased volume of pure water had a decided influence upon the bacterial counts from the collecting stations of the upper part of the stream. Plates XXII, XXIV, XXVI and XXVIII bring this out in a striking manner. The solid lines (1899) for Lockport, Joliet and Morris are from seven to 75 times as long as the open lines (1900). The only exception is for September at Lockport, when the water was then practically stagnant at the time in the old Illinois and Michigan Canal.

From Ottawa onward the influence of the lake water is not so apparent. Except for the showing at Wesley City and Pekin it cannot be said that the difference between the two years as shown in plates XXI to XXVIII is anything beyond what might easily occur without aid from man. Neither is it certain that the difference at Wesley City and Pekin is principally due to the opening of the canal. Some changes in the disposal of the wastes from the distilleries and glucose works and of the wash

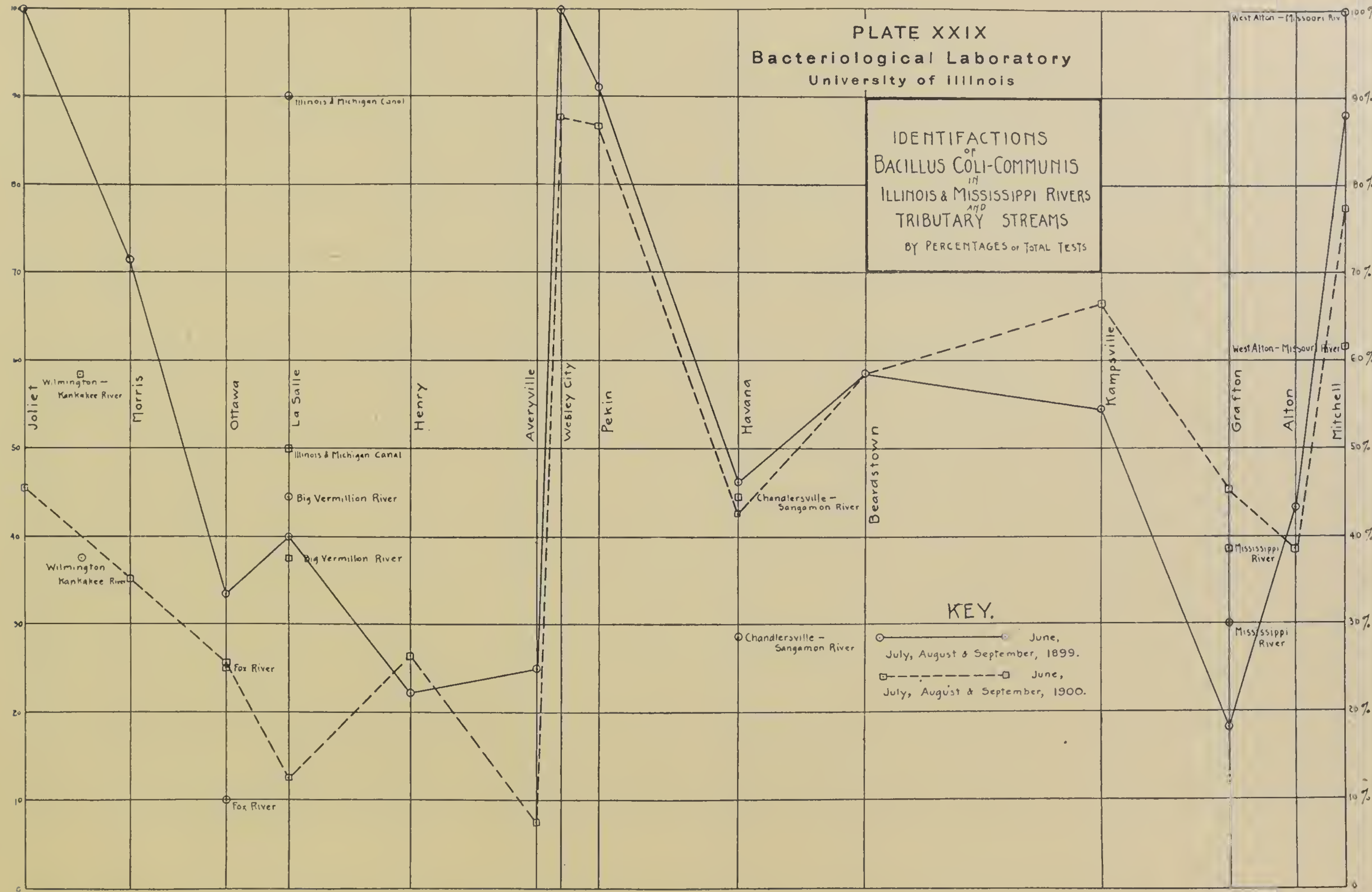


PLATE XXIX
Bacteriological Laboratory
University of Illinois
IDENTIFACTIONS of BACILLUS COLI-COMMUNIS in ILLINOIS & MISSISSIPPI RIVERS AND TRIBUTARY STREAMS
BY PERCENTAGES of TOTAL TESTS
KEY.
June, July, August & September, 1899.
June, July, August & September, 1900.
Joliet
Morris
Ottawa
La Salle
Henry
Averyville
Webley City
Pekin
Havana
Beardstown
Kampsville
Grafton
Alton
Mitchell
Wilmington — Kankakee River
Fox River
Illinois & Michigan Canal
Big Vermillion River
Chandlersville — Sangamon River
Mississippi River
West Alton — Missouri River
0
10 %
20 %
30 %
40 %
50 %
60 %
70 %
80 %
90 %
100 %

from the cattle sheds might easily account for the change, pronounced as it is. It is, however, true that the volume of water passing Peoria was largely greater for the months compared in 1900. The difference in average height of the water gauge as given for Averyville, tables 14 and 53, for the two years is over two feet. As the water is practically pure at this point during the summer, the sewage of Peoria is diluted somewhat in the same way as that of Chicago in the Sanitary Canal, and the tables clearly indicate this by the reported number of bacteria for June, July and August. This leaves unexplained, however, the different showing for September. Compare the heavy and open lines on plates XXVI and XXVIII for Pekin. The cause of the change of relation here shown is not apparent, though the great irregularities in the counts for this place render it not surprising. On table 16 the counts for September, 1899, are 40,000, 445,000, 570,000 and 510,000, though for August 2d and 9th they are 3,635,000 and 3,073,300, and for November 1st and 9th they are 2,100,000 and 2,780,000. Table 55 shows the counts for September, 1900, to be 1,320,000, 600,000, 47,500 and 2,280,000. It is scarcely worth while to try to look for any rule or law in such variations as these, but a reasonable explanation lies in the fact that the pollution all comes at Peoria from the west side and is not soon below uniformly mixed with the waters of the stream.

If there is any effect at all shown at Grafton, which is very doubtful, it is that the numbers of bacteria are slightly greater on account of the increased amount of water in the river. At all events the counts from the mouth of the Illinois were larger in 1900 than they were in 1899, as is clearly shown in plates XXI, XXIII, XXV and XXVII. It is to be noted, however, that the same is true for the Mississippi River at Grafton, except during June, as is shown on the same plates by position of the little squares (1900) and circles (1899). Surely the Sanitary Canal has nothing to do with the bacteria of the Mississippi above the mouth of the Illinois.

In a word, it may be said that these investigations give no demonstration of any change in the bacterial content of the drainage waters from Chicago traceable to the opening of the Sanitary Canal, except as applied to the stream above Ottawa. This refers, however, to the warm season of the year. In the winter the limiting point may be farther down stream.

BACILLUS COLI-COMMUNIS.

The methods used for the identification of this organism, or group of organisms, have heretofore been given. In next to the last column in tables 1 to 80 inclusive, the results for all the samples tested have been indicated by the signs +, —, and ?. The first means that the organism was present, the second that it was absent, and the third that the test was inconclusive.

With rare exceptions there are no negative results from samples taken above Ottawa. From the tests at Morris in 1899 there are 14 posi-

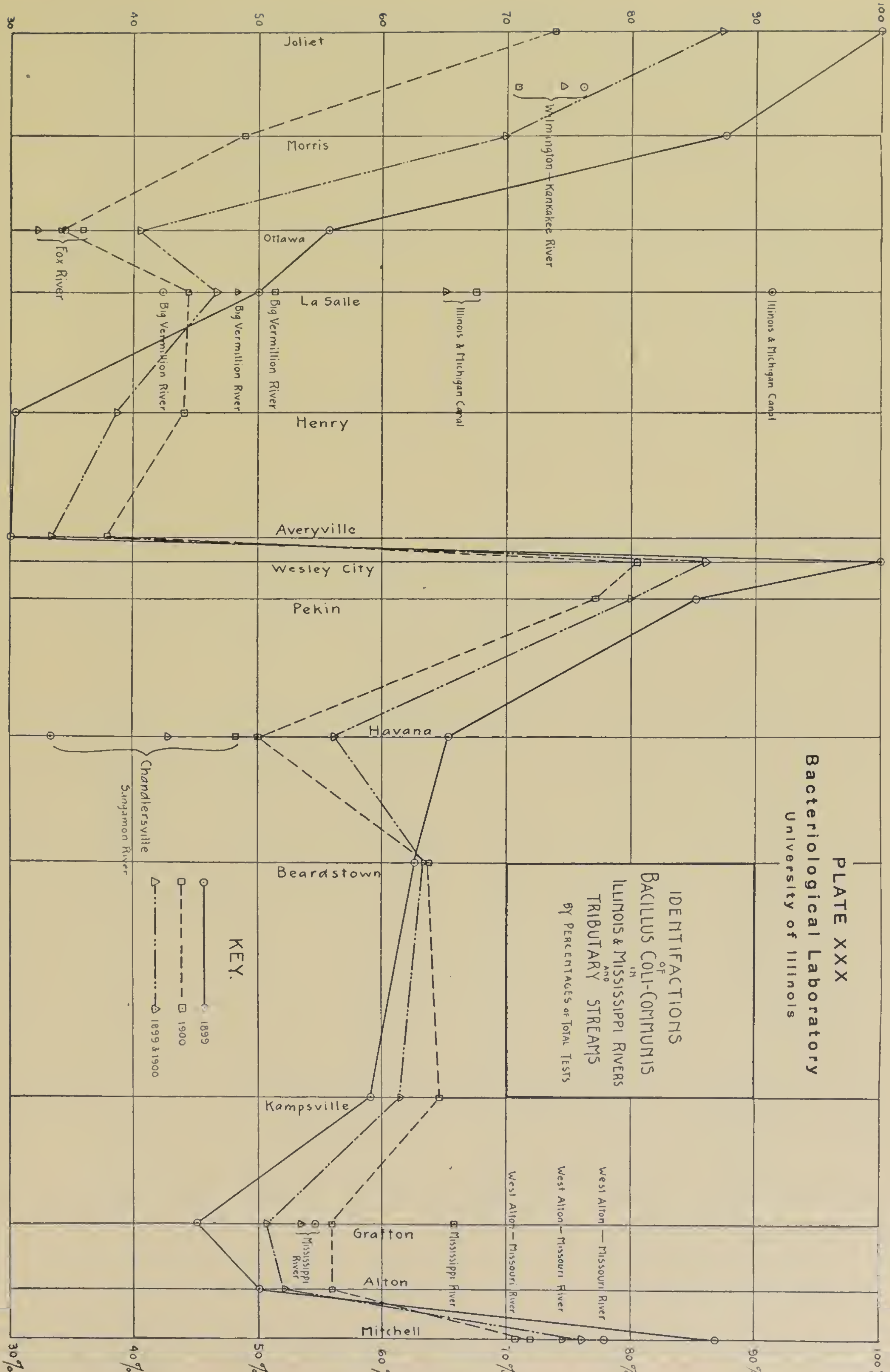


PLATE XXX
Bacteriological Laboratory
University of Illinois
IDENTIFACTIONS OF BACILLUS COLI-COMMUNIS IN ILLINOIS & MISSISSIPPI RIVERS AND TRIBUTARY STREAMS
BY PERCENTAGES of TOTAL TESTS
KEY.
1899
1900
1899 & 1900
Joliet
Morris
Ottawa
La Salle
Henry
Averyville
Wesley City
Pekin
Havana
Beardstown
Kampsville
Grafton
Alton
Mitchell
Wilmington — Kankakee River
Fox River
Big Vermillion River
Big Vermillion River
Big Vermillion River
Illinois & Michigan Canal
Illinois & Michigan Canal
Chandlersville
Sangamon River
Mississippi River
Mississippi River
West Alton — Missouri River
West Alton — Missouri River
West Alton — Missouri River
30
40
50
60
70
80
90
100
30%
40%
50%
60%
70%
80%
90%
100%

tive, no negative and 2 questionable, and in 1900 there are 23 positive, 3 negative and 11 questionable results. Thus, out of 53 analyses there were only two samples in which it could be affirmed the bacillus was absent. At Ottawa, however, a change begins. In 1899 the samples from the Illinois river at this place gave 10 positive, 7 negative and 1 doubtful tests, and in 1900 there were 11 of the first, 17 of the second and 5 of the third, or together 21 positive, 24 negative and 6 doubtful. At Henry there are 22, 30 and 5, in the same order; and at Averyville, the count shows 19, 21 and 2. Then at Wesley City and Pekin we see the same exhibit as at Bridgeport and at Lockport, to change again at Havana in such manner that we have 31, 12 and 14; at Beardstown, 37, 18 and 3; at Kampsville, 35, 18 and 2, and from the Illinois at Grafton, 31, 23 and 1.

If we compare with this the Mississippi at Grafton (above the Illinois) and the Missouri at West Alton, we have:

	+	—	?
Illinois	31	23	1
Mississippi	35	20	1
Missouri	36	7	7

As will be seen, the organism was present most often in the waters of the Missouri river, next in those of the Illinois, and least frequently in those of the Mississippi, if the whole time of the investigation is considered. The first seems to be generally true; the relation of the second and third changes at times.

An attempt is made to present graphically the results of the investigation on plate XXX. For this purpose the numbers were reduced to per cents of the whole number of tests made for each collecting station. The connecting lines show the results for 1899 and for 1900 separately and for the two years combined. It was not deemed important to include the stations above Joliet, because the per cent in almost every case was 100.

It will be noticed that the line for 1899 begins above that for 1900, but drops below at Henry and remains below to Havana, then crosses again at Beardstown, to remain above to Mitchell.

The explanation of this to Averyville is, no doubt, to be sought in the opening of the Sanitary Canal. The dilution of the sewage is effective throughout and controls everything to some point below La Salle, where other influences, like the greater current and the better conditions for the multiplication of this particular bacillus, overcome and make the showing of the chart.

The lines of the plate nowhere descend again so low as they are at Averyville. From this point on, local contaminations keep the percentages high, falling, however, from Kampsville to Grafton, then rising to Mitchell. This last seems clearly due to the influence of the Missouri, whose waters have, as has just been shown, a greater proportional number of the organisms.

SPECIES DETERMINATIONS.

The main efforts in this work were upon the matters above reported, though considerable attention was at one time or another given to the identification of the various species of bacteria procured in the cultures. It may be remarked that *Bacillus typhosus* was not recognized, though it is presumable that it was sometimes present in the waters examined. One thing was plainly evident, viz., that at a station like Grafton, considerably distant from a source of much contamination, the colonies of bacteria grown in a plating dish were of much fewer species than were those from water having fresher pollution. There had been a survival of the fittest, and, as a rule, only those best adapted to the changing conditions, or to the ultimate ones, survived. It would be contrary to all information on the subject to include theoretically among these any of the principal bacteria pathogenic to man.

CONCLUSION.

These studies in detail and as a whole tend strongly to show that neither before nor after the opening of the Sanitary Canal had the drainage waters from the city of Chicago for the period covered by this report any appreciable effect bacteriologically upon the waters of the Mississippi river. Even if the waters of the Illinois river at its mouth were proved to be a source of contamination to those of the Mississippi, the above statement would still seem to hold good, because of the conditions shown to exist at Averyville and Pekin. It is still more clearly apparent that Chicago sewage cannot be held responsible for the contaminations existing in the commingled waters of the Mississippi and Missouri Rivers.

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APPENDIX

ERRATA.

TABLE 120.

Serial No. 1301; Jan. 28, No. Bacteria per cc. for 540,000 read 340,000.
Serial No. 1397; Feb. 19, Temperature of Air for 0. read —.5.
Serial No. 1673; April 16, Temperature of Air for 16. read 17.
Serial No. 1712; April 23, Temperature of Air for 13. read 15.

TABLE 121.

Serial No. 1563; March 26, Temperature of Water for —5. read —.5.

TABLE 122.

Serial No. 1598; April 2, Albuminoid Am. Dissol'd for .364 read .264.

TABLE 123.

Serial No. 1788; May 8, Temperature of Water for 16.5 read 15.5.
Serial No. 1896; May 30, Albuminoid Am. Susp'd for .08 read .04.

TABLE 126.

Serial No. 1306; Jan. 29, Temperature of Water for 2. read —2.
Serial No. 1306; Jan. 29, Temperature of Air for 8. read —8.
Serial No. 1399; Feb. 19, Temperature of Water for 1. read —1.
Serial No. 1674; April 16, Chlorine for 2.2 read 3.2.
Serial No. 1751; April 30, Res. on Evap. Suspend'd for 4. read 7.

TABLE 127.

Serial No. 1338; Feb. 5, Chlorine for 15. read 25.
Serial No. 1758; April 30, Color for .14 read .4.
Serial No. 1822; May 15, Nitrogen as Nitrates for .4 read .41.

TABLE 128.

Serial No. 1681; April 17, Albuminoid Am. Suspend'd for .189 read .184.

TABLE 129.

Serial No. 1250; Jan. 18, Temperature of Water for 2. read 3.
Serial No. 1490; March 12, Albuminoid Am. Suspen'd for .032 read .232.
Serial No. 1604; April 3, Oxygen Consumed by Dis'd for 0.8 read 6.8.
Serial No. 1791; May 8, Nitrogen as Nitrites for .8 read .18.

TABLE 131.

Serial No. 1969; June 12, No. Bacteria per cc. for 3,900 read 9,900.

TABLE 132.

Serial No. 1726; April 24, Residue on Evap. Total for 344 read 394.

TABLE 133.

Serial No. 1401; Feb. 19, Temperature of Air for 12. read —12.
Serial No. 1433; Feb. 26, Temperature of Air for 13. read —13.
Serial No. 1456; March 5, Temperature of Air for 11. read —11.
Serial No. 1562; March 26, Temperature of Air for .3 read 3.

TABLE 134.

Serial No. 1275; Jan. 23, Nitrogen as Nitrites for .1 read —

TABLE 135.

Serial No. 1974; June 13, Color for .3 read .2.

TABLE 137.

Serial No. 1314; Jan. 30, No. Bacteria per cc. for 63,000 read 63,400.
Serial No. 1971; June 13, Nitrogen as Nitrates for .06 read .6.
Serial No. 1971; June 13, Temperature of Air for 33. read 23.

TABLE 138.

Serial No. 1384; Feb. 14, Oxygen Consumed, Total for 5. read 2.5.
Serial No. 1731; April 25, Res. on Evap. Dissol'd for 274. read 276.
Serial No. 1945; June 6, Albuminoid Am. Susp'd for .224 read .244.

TABLE 139.

Serial No. 1428; Feb. 22, Nitrogen as Nitrates for 1.15 read 1.65.
Serial No. 1440; March 1, Albuminoid Am. Diss'd for .252 read .232.

TABLE 140.

Serial No. 1354; Feb. 7, Free Ammonia for 1.8 read 1.54.
Serial No. 1354; Feb. 7, Albuminoid Am. Total for .154 read .432.
Serial No. 1354; Feb. 7, Albuminoid Am. Diss'd for .432 read .216.

TABLE 142.

Serial No. 1188; Jan. 4, Chlorine for 6.27 read 3.1.
Serial No. 1218; Jan. 10, Chlorine for 4.67 read 2.3.

TABLE 143.

Serial No. 1277; Jan. 24, Temperature of Air for 10. read —.
Serial No. 1348; Feb. 7, Temperature of Air for 10. read —.
Serial No. 1441; March 2, Height of Water for 3.4 read 3.
Serial No. 1503; March 14, Nitrogen as Nitrites for .018 read .01.
Serial No. 1539; March 21, Res. on Evap. Susp'd for 839. read 837.
Serial No. 1773; May 2, Chlorine for 0.8 read 6.8.

TABLE 144.

Serial No. 1278; Jan. 24, Res. on Evap. Susp'd for 328. read 238.
Serial No. 1420; Feb. 21, Height of Water for 5.5 read 5.08.
Serial No. 1432; March 2, Height of Water for 3.4 read 3.04.
Serial No. 1466, March 9, Albuminoid Am. Total for .056 read .656.

TABLE 145.

Serial No. 1184; Jan. 4, Albuminoid Am. Susp'd for .096 read .094.

TABLE 146.

Serial No. 1422; Feb. 22, Res. on Evap. Total for 620. read 420.
Serial No. 1422; Feb. 22, Res. on Evap. Susp'd for 466. read 266.
Serial No. 1422; Feb. 22, Height of Water for 5.5 read 5.08.
Serial No. 1444; March 1, Height of Water for 3.4 read 3.04.

TABLE 147.

Serial No. 1186; Jan. 4, Res. on Evap. Total for 216. read 266.
Serial No. 1325; Feb. 2, Nitrogen as Nitrates for .7 read .9.
Serial No. 1423; Feb. 22, Height of Water for 5.5 read 5.08.
Serial No. 1445; March 2, Height of Water for 3.4 read 3.04.

TABLE 148.

Serial No. 1359; Feb. 8, Height of Water for 2.7 read 2.4.
Serial No. 1700; April 19, Albuminoid Am. Susp'd for .154 read .104.

TABLE 149.

Serial No. 1360; Feb. 8, Height of Water for 2.7 read 2.4.

TABLE 150.

Serial No. 1361; Feb. 8, Height of Water for 2.7 read 2.4.
Serial No. 1658; April 12, Albuminoid Am. Total for .848 read .846.
Serial No. 1658; April 12, Albuminoid Am. Susp'd for .664 read .662.

TABLE 151.

Serial No. 1362; Feb. 8, Height of Water for 2.7 read 2.4.
Serial No. 1918; May 31, Oxygen Cons'd by Diss'd for 9.8 read 3.8.
Serial No. 1951; June 7, Albuminoid Am. Total for .63 read .68.
Serial No. 1951; June 7, Albuminoid Am. Susp'd for .57 read .56.

TABLE 152.

Serial No. 1263; Jan. 18, Temperature of Water for 1. read 4.
Serial No. 1766; May 1, Albuminoid Am. Diss'd for .166 read .176.

SANITARY DISTRICT OF CHICAGO

TABULATION FOR THE YEAR 1900

Of the average daily and weekly rate of flow, in cubic feet per minute, through the Illinois and Michigan Canal; through the Main Drainage Channel; through the Chicago River; through the Desplaines River at Riverside; through the Desplaines River at Joliet.

No. of the Week.	Day of the Month.	Day of the Week.	Flow of Illinois and Michigan Canal. Estimated from 3 daily readings reduced to canal lock gauge near Bridgeport pumps. I,	Flow through Main Drainage Channel. Estimated from 48 half-hour readings daily of Controlling Works near Lockport, Illinois. L.	Flow through Chicago River. Being sum of (I) at Bridgeport and (L) at Lockport 29 miles below, without correction for time intervals. C.	Flow of Desplaines River at Riverside. Estimated from 2 daily readings on the Riverside Gauge. R.	Flow at Dam No. 1, Joliet. Being sum of (I) 33 miles above, (L) 4 miles above, and (R) 28 miles above. Without corrections for time intervals. J.
1899.							
	Dec. 31,	Sunday	(44833)	000000	(44833)	(1320)	(46153)
1900.							
	Jan. 1,	Monday	44833	0	44833	1320	46153
	2,	Tuesday	45267	0	45267	1320	46587
	3,	Wednesday	50000	0	50000	1320	51320
	4,	Thursday	46067	0	46067	1320	47387
	5,	Friday	43267	0	43267	1320	44587
	6,	Saturday	35867	0	35867	1320	37187
			310134	0	310134	9240	319374
(1)		Weekly average	44305	0	44305	1320	45625
	7,	Sunday	40700	0	40700	1320	42020
	8,	Monday	40700	0	40700	2130	42830
	9,	Tuesday	40367	0	40367	2820	43187
	10,	Wednesday	40033	0	40033	3300	43333
	11,	Thursday	39333	0	39333	3300	42633
	12,	Friday	33767	0	33767	3300	37067
	13,	Saturday	29000	0	29000	3300	32300
			263900	0	263900	19470	283370
(2)		Weekly average	37700	0	37700	2781	40481
	14,	Sunday	32067	0	32067	3300	35367
	15,	Monday	37300	0	37300	3300	40600
	16,	Tuesday	39300	0	39300	3300	42600
	17,	Wednesday	38600	(58429)	(97029)	4650	(101679)
	18,	Thursday	38667	(90400)	(129067)	8850	(137917)
	19,	Friday	38300	(107700)	(146000)	13980	(159980)
	20,	Saturday	34633	(132454)	(167087)	20610	(187697)
			258867	388983	647850	57990	705840
(3)		Weekly average	36981	55569	92550	8284	100834
	21,	Sunday	35200	(162150)	(197350)	30840	(228190)
	22,	Monday	26400	(178081)	(204481)	26160	(230641)
	23,	Tuesday	22933	231667	254600	2130	256730
	24,	Wednesday	23167	220062	243229	17040	260269
	25,	Thursday	24433	216400	240833	17040	257873
	26,	Friday	24167	234358	258525	14880	273405
	27,	Saturday	22933	229337	252270	14880	267150
			179233	1472055	1651288	122970	1774258
(4)		Weekly average	25605	210293	235898	17567	253465
	28,	Sunday	22933	225209	248142	14880	263022
	29,	Monday	18900	222363	241263	13080	254343
	30,	Tuesday	17500	205531	223031	11040	234071
	31,	Wednesday	18367	181094	199461	8640	208101
	Feb. 1,	Thursday	23100	106461	129561	6660	136221
	2,	Friday	33067	97392	130459	4650	135109
	3,	Saturday	38233	95288	133521	1980	135501
			172100	1133338	1305438	60930	1366368
(5)		Weekly average	24586	161905	186491	8704	195195

	I.	L.	C.	R.	J.
4, Sunday	43333	103173	146506	1320	147826
5, Monday	45100	93602	138702	11190	149892
6, Tuesday	44433	95504	139937	46680	186617
7, Wednesday	43267	98660	141927	79080	221007
8, Thursday	57667	65033	122700	102360	225060
9, Friday	51333	86277	137610	129120	266730
10, Saturday	40767	73548	114315	138690	253005
	325900	615797	941697	508440	1450137
(6) Weekly average	46557	87971	134528	72634	207162
11, Sunday	41433	126759	168192	60000	228192
12, Monday	38967	147121	186088	97380	283468
13, Tuesday	41100	162766	203866	73590	277456
14, Wednesday	33533	186821	220354	58560	278914
15, Thursday	27600	211542	239142	40800	279942
16, Friday	28167	149431	177598	28440	206038
17, Saturday	36467	116194	152661	21300	173961
	247267	1100634	1347901	380070	1727971
(7) Weekly average	35324	157233	192557	54296	246853
18, Sunday	38967	201123	240090	17040	257130
19, Monday	37667	200867	238534	14880	253414
20, Tuesday	35500	197332	232832	14880	247712
21, Wednesday	37167	201329	238496	14880	253376
22, Thursday	37900	253544	291444	14880	306324
23, Friday	28100	180356	208456	14880	223336
24, Saturday	41467	124531	165998	14880	180878
	256768	1359082	1615850	106320	1722170
(8) Weekly average	36681	194155	230836	15188	246024
25, Sunday	43633	181839	225472	14880	240352
26, Monday	37300	148271	185571	14880	200451
27, Tuesday	35167	107675	142842	14880	157722
28, Wednesday	28767	75966	104733	14880	119613
March 1, Thursday	21467	73333	94800	14880	109680
2, Friday	28700	105125	133825	14880	148705
3, Saturday	40400	128671	169071	14880	183951
	235434	820880	1056314	104160	1160474
(9) Weekly average	33633	117269	150902	14880	165782
4, Sunday	37167	140917	178084	13080	191164
5, Monday	38233	128577	166810	12180	178990
6, Tuesday	45700	128444	174144	12180	186324
7, Wednesday	44000	161869	205869	14880	220749
8, Thursday	40033	159031	199064	17040	216104
9, Friday	37200	162511	199711	18300	218011
10, Saturday	41833	165421	207254	19800	227054
	284166	1046770	1330936	107460	1438396
(10) Weekly average	40595	149539	190134	15351	205485
11, Sunday	49733	144340	194073	140100	334173
12, Monday	50800	116371	167171	192870	360041
13, Tuesday	46833	84517	131350	292350	423700
14, Wednesday	46067	66725	112792	275820	388612
15, Thursday	43267	79239	122506	215580	338086
16, Friday	42167	112114	154281	159360	313641
17, Saturday	40367	138035	178402	120960	299362
	319234	741341	1060575	1397040	2457615
(11) Weekly average	45605	105906	151511	199577	351088
18, Sunday	31900	158802	190702	112740	303442
19, Monday	34333	159696	194029	92580	286609
20, Tuesday	32000	161988	193988	88200	282188
21, Wednesday	38967	163596	202563	92580	295143
22, Thursday	37933	154212	192145	74700	266845
23, Friday	39000	139488	178488	32220	210708
24, Saturday	38333	75869	114202	64440	178642
	252166	1013651	1266117	557460	1823577
(12) Weekly average	36067	144807	180874	79637	260511
25, Sunday	34533	75640	110173	131820	241993
26, Monday	40733	87085	127818	146160	273978
27, Tuesday	34200	102523	136723	159360	296082
28, Wednesday	37900	98506	136406	153260	289666
29, Thursday	38933	156940	195873	129120	324993
30, Friday	24367	142190	166557	70740	237297
31, Saturday	(0)	132219	132219	58560	190779
	210666	795103	1005769	849020	1854788
(13) Weekly average	30095	113586	143681	121289	261970

	I.	L.	C.	R.	J.
Apr. 1, Sunday	29900	103054	132954	58560	191514
2, Monday	37866	109310	147176	58560	205736
3, Tuesday	35800	124448	160248	61440	221688
4, Wednesday	37533	126400	163933	58560	222493
5, Thursday	37867	118800	156667	51360	208027
6, Friday	32033	153479	185512	40800	226312
7, Saturday	24967	212588	237555	34800	272355
	235966	948079	1184045	364080	1548125
(14) Weekly average	33709	135440	169149	52012	221161
8, Sunday	22667	225688	248355	27240	275595
9, Monday	21000	231621	252621	22800	275421
10, Tuesday	21000	168150	189150	17040	206190
11, Wednesday	25767	109033	134800	13080	147880
12, Thursday	40400	223323	263723	11040	274763
13, Friday	32600	225900	258500	11040	269540
14, Saturday	32033	168606	200639	11040	211679
	195467	1352321	1547788	113280	1661068
(15) Weekly average	27924	193189	221113	16183	237296
15, Sunday	27700	141471	169171	11040	180211
16, Monday	39667	141627	181294	11040	192334
17, Tuesday	44000	94363	138363	13080	151443
18, Wednesday	44367	94496	138863	19800	158663
19, Thursday	37933	182763	220696	47760	268456
20, Friday	33233	147621	180854	36300	217154
21, Saturday	33700	140067	173767	29640	203407
	260600	942408	1203008	168660	1371668
(16) Weekly average	37228	134630	171858	24094	195952
22, Sunday	27300	192048	219348	25080	244428
23, Monday	32433	175069	207502	18300	225802
24, Tuesday	29633	226250	255883	14880	270763
25, Wednesday	28433	227883	256316	13980	270296
26, Thursday	26100	230681	256781	12180	268961
27, Friday	22600	226869	249469	9840	259309
28, Saturday	22200	117606	139806	6660	146466
	188699	1396406	1585105	100920	1686025
(17) Weekly average	26957	199487	226444	14417	240861
29, Sunday	28333	66316	94649	5340	99989
30, Monday	38567	203792	242359	4380	246739
May 1, Tuesday	34500	181096	215596	3960	219556
2, Wednesday	42967	84421	127388	3960	131348
3, Thursday	41533	145242	186775	3720	190495
4, Friday	39333	168375	207708	3000	210708
5, Saturday	39667	180413	220080	2640	222720
	264900	1029655	1294555	27000	1321555
(18) Weekly average	37843	147093	184936	3857	188793
6, Sunday	35200	205498	240698	2640	243338
7, Monday	34067	222427	256494	2640	259134
8, Tuesday	39333	176381	215714	8850	224564
9, Wednesday	40733	111046	151779	18420	170199
10, Thursday	34567	188527	223094	12180	235274
11, Friday	32767	193981	226748	6660	233408
12, Saturday	32633	232131	264764	6660	271424
	249300	1329991	1579291	58050	1637341
(19) Weekly average	35614	189999	225613	8293	233906
13, Sunday	28433	233127	261560	5340	266900
14, Monday	26167	213100	239267	4620	243887
15, Tuesday	28167	220517	248684	3300	251984
16, Wednesday	32967	205544	238511	1920	240431
17, Thursday	35833	144252	180085	1320	181405
18, Friday	24700	125242	149942	360	150302
19, Saturday	24433	89008	113441	360	113801
	200700	1230790	1431490	17220	1448710
(20) Weekly average	28672	175827	204499	2460	206959
20, Sunday	23167	99144	122311	720	123031
21, Monday	21233	212544	233777	720	234497
22, Tuesday	19733	249867	269600	720	270320
23, Wednesday	19267	240102	259369	540	259909
24, Thursday	19500	235671	255171	540	255711
25, Friday	18433	250554	268987	240	269227
26, Saturday	19267	253910	273177	60	273237
	140600	1541792	1682392	3540	1685932
(21) Weekly average	20086	220256	240342	506	240848

	I.	L.	C.	R.	J.
May 27, Sunday	19767	261448	281215	0	281215
28, Monday	20933	145433	166366	0	166366
29, Tuesday	21033	265844	286877	60	286937
30, Wednesday	20300	231069	251369	60	251429
31, Thursday	20267	237827	258094	0	258094
June 1, Friday	21467	206550	228017	0	228017
2, Saturday	20733	242467	263200	0	263200
	144500	1590638	1735138	120	1735258
(22) Weekly average	20643	227234	247877	17	247894
3, Sunday	20200	249260	269460	0	269460
4, Monday	17700	241475	259175	0	259175
5, Tuesday	17933	250646	268579	0	268579
6, Wednesday	21433	201088	222521	1320	223841
7, Thursday	25500	170825	196325	8850	205175
8, Friday	26400	157029	183429	12960	196389
9, Saturday	27300	154396	181696	7320	189016
	156466	1424719	1581185	30450	1611635
(23) Weekly average	22352	203531	225883	4350	230233
10, Sunday	27000	162954	189954	8640	198594
11, Monday	24967	164571	189538	5340	194878
12, Tuesday	24967	129329	154296	2640	156936
13, Wednesday	30533	120719	151252	1320	152572
14, Thursday	28767	119279	148046	720	148766
15, Friday	27900	157941	185841	720	186561
16, Saturday	24300	287381	311681	540	312221
	188434	1142174	1330608	19920	1350528
(24) Weekly average	26919	163168	190087	2846	192933
17, Sunday	21467	250433	271900	360	272260
18, Monday	18867	169608	188475	360	188835
19, Tuesday	21467	159346	180813	240	181053
20, Wednesday	17500	163110	180610	60	180670
21, Thursday	25067	160248	185315	60	185375
22, Friday	19700	213458	233158	60	233218
23, Saturday	14567	249454	264021	60	264081
	138635	1365657	1504292	1200	1505492
(25) Weekly average	19805	195094	214899	171	215070
24, Sunday	23700	251833	275533	60	275593
25, Monday	23667	238083	261750	0	261750
26, Tuesday	24167	205644	229811	0	229811
27, Wednesday	24700	198083	222783	0	222783
28, Thursday	23933	190850	214783	0	214783
29, Friday	24167	198973	223140	0	223140
30, Saturday	25567	141223	166790	0	166790
	169901	1424689	1594590	60	1594650
(26) Weekly average	24272	203527	227799	8	227807
July 1, Sunday	23100	184648	207748	0	207748
2, Monday	17333	202896	220229	0	220229
3, Tuesday	18100	200546	218646	0	218646
4, Wednesday	17967	199025	216992	0	216992
5, Thursday	14800	205308	220108	0	220108
6, Friday	21967	205019	226986	0	226986
7, Saturday	30500	200629	231129	0	231129
	143767	1398071	1541838	0	1541838
(27) Weekly average	20538	199725	220263	0	220263
8, Sunday	30800	190727	221527	60	221587
9, Monday	31400	197927	229327	240	229567
10, Tuesday	31100	213640	244740	360	245100
11, Wednesday	29033	205915	234948	360	235308
12, Thursday	30200	205290	235490	240	235730
13, Friday	32300	130931	163231	60	163291
14, Saturday	33200	200256	233456	0	233456
	218033	1344686	1562719	1320	1564039
(28) Weekly average	31148	192098	223246	188	223434
15, Sunday	31400	189883	221283	0	221283
16, Monday	30233	201550	231783	0	231783
17, Tuesday	28733	211560	240293	360	240653
18, Wednesday	29333	206975	236308	360	236668
19, Thursday	30500	206252	236752	360	237112
20, Friday	29600	208146	237746	360	238106
21, Saturday	27300	209871	237171	360	237531
	207099	1434237	1641336	1800	1643136
(29) Weekly average	29586	204891	234477	257	234734

	I.	L.	C.	R.	J.
July 22, Sunday	26400	200935	227335	720	228055
23, Monday	24700	123255	147955	540	148495
24, Tuesday	23467	192008	215475	540	216015
25, Wednesday	23200	178331	201531	1680	203211
26, Thursday	24700	195755	220455	3960	224415
27, Friday	22233	237198	259431	3300	262731
28, Saturday	21933	226275	248208	3300	251508
	166633	1353757	1520390	14040	1534430
(30) Weekly average	23805	193394	217199	2005	219204
29, Sunday	21733	306536	328269	2340	330609
30, Monday	21200	228425	249625	1920	251545
31, Tuesday	21700	241155	262855	1920	264775
Aug. 1, Wednesday	21233	207880	229113	1680	230793
2, Thursday	21000	240850	261850	1320	263170
3, Friday	21000	194119	215119	1080	216199
4, Saturday	20466	237785	258251	720	258971
	148332	1656750	1805082	10980	1816062
(31) Weekly average	21190	236679	257869	1568	259437
5, Sunday	19733	231208	250941	720	251661
6, Monday	19733	231096	250829	720	251549
7, Tuesday	19733	223982	243715	720	244435
8, Wednesday	18167	210927	229094	720	229814
9, Thursday	21200	230473	251673	720	252393
10, Friday	22667	224427	247094	720	247814
11, Saturday	25033	220169	245202	540	245742
	146266	1572282	1718548	4860	1723408
(32) Weekly average	20895	224612	245507	694	246201
12, Sunday	21500	227357	248857	540	249397
13, Monday	18567	236244	254811	720	255531
14, Tuesday	22467	184307	206774	1920	208694
15, Wednesday	27600	222592	250192	1320	251512
16, Thursday	24433	234198	258631	2640	261271
17, Friday	24200	224592	248792	3000	251792
18, Saturday	25500	235450	260950	3720	264670
	164267	1564740	1729007	12860	1741867
(33) Weekly average	23467	223534	247001	1837	248838
19, Sunday	24500	129400	153900	5340	159240
20, Monday	26133	190541	216674	6660	223334
21, Tuesday	25833	143017	168850	6420	175270
22, Wednesday	26400	203079	229479	5700	235179
23, Thursday	26700	202686	229386	6330	235716
24, Friday	27000	91113	118113	9240	127353
25, Saturday	27000	210832	237832	12060	249892
	183566	1170668	1354234	51750	1405984
(34) Weekly average	26224	167238	193462	7393	200855
26, Sunday	26400	232565	258965	39630	298595
27, Monday	26700	177879	204579	66130	270709
28, Tuesday	26400	264086	290486	84780	375266
29, Wednesday	26400	260223	286623	77220	363843
30, Thursday	26400	262398	288798	62700	351498
31, Friday	25533	266485	292018	58740	350758
Sept. 1, Saturday	25500	265900	291400	56400	347800
	183333	1729536	1912869	445600	2358469
(35) Weekly average	26190	247077	273267	63657	336924
2, Sunday	25500	252456	277956	45960	323916
3, Monday	24967	243612	268579	39300	307879
4, Tuesday	25933	125442	151375	33420	184795
5, Wednesday	27300	121229	148529	28440	176969
6, Thursday	25933	82346	108279	23940	132219
7, Friday	28733	47725	76458	21300	97758
8, Saturday	28167	68665	96832	18300	115132
	186533	941475	1128008	210660	1338668
(36) Weekly average	26648	134496	161144	30094	191238
9, Sunday	27300	165942	193242	15840	209082
10, Monday	26667	71558	98225	13980	112205
11, Tuesday	28167	64819	92986	12180	105166
12, Wednesday	23333	57927	81160	11840	93000
13, Thursday	26100	61302	87402	9360	96762
14, Friday	27000	107181	134181	8160	142341
15, Saturday	27000	295962	322962	7080	330042
	185467	824691	1010158	78440	1088598
(37) Weekly average	26495	117813	144308	11206	155514

AVERAGE DAILY AND WEEKLY RATE OF FLOW—Concluded.

		I.	L.	C.	R.	J.
Sept.	16, Sunday	25500	240781	266281	6420	272701
	17, Monday	26667	1863	28530	5700	34230
	18, Tuesday	22967	5375	28342	5040	33382
	19, Wednesday	23167	7129	30296	4380	34676
	20, Thursday	26100	6069	32169	3960	36129
	21, Friday	25800	31316	57116	3720	60836
	22, Saturday	23700	94832	118532	3300	121832
		173901	387365	561266	32520	593786
	(38) Weekly average	24843	55338	80181	4646	84827
	23, Sunday	23200	113663	136863	2640	139503
	24, Monday	25333	243056	268389	2640	271029
	25, Tuesday	26400	207265	233665	2640	236305
	26, Wednesday	25800	326791	352591	2640	355231
	27, Thursday	24967	199640	224607	2340	226947
	28, Friday	26733	194238	220971	2120	223091
	29, Saturday	28200	188071	216271	2120	218391
		180633	1472724	1653357	17140	1670497
	(39) Weekly average	25805	210389	236194	2448	238642
	30, Sunday	27300	260363	287663	1680	289343
Oct.	1, Monday	25800	257307	283107	1320	284427
	2, Tuesday	26100	260763	286863	1320	288183
	3, Wednesday	25500	262381	287881	1320	289201
	4, Thursday	25800	259600	285400	1320	286720
	5, Friday	27000	258869	285869	1320	287189
	6, Saturday	27000	260198	287198	1320	288518
		184500	1819481	2003981	9600	2013581
	(40) Weekly average	26357	259926	286283	1371	287654
	7, Sunday	26100	263025	289125	1320	290445
	8, Monday	25533	269436	294969	1320	296289
	9, Tuesday	23167	231593	254760	1320	256080
	10, Wednesday	22667	106391	129058	1320	130378
	11, Thursday	22933	183073	206006	1320	207326
	12, Friday	22933	147767	170700	1320	172020
	13, Saturday	22667	150940	173607	1320	174927
		166000	1352225	1518225	9240	1527465
	(41) Weekly average	23714	193175	216889	1320	218209
	14, Sunday	22667	218669	241336	1320	242656
	15, Monday	23433	216726	240159	1320	241479
	16, Tuesday	21967	189405	211372	1320	212692
	17, Wednesday	23433	187373	210806	1320	212126
	18, Thursday	23433	179419	202852	1320	204172
	19, Friday	23200	183173	206373	1320	207693
	20, Saturday	23433	181582	205015	1320	206335
		161566	1356347	1517913	9240	1527153
	(42) Weekly average	23081	193764	216845	1320	218165
	21, Sunday	23433	221129	244562	1320	245882
	22, Monday	23433	183142	206575	1320	207895
	23, Tuesday	23667	183592	207259	1320	208579
	24, Wednesday	25033	182286	207319	1320	208639
	25, Thursday	24167	181712	205879	1320	207199
	26, Friday	24200	180387	204587	1320	205907
	27, Saturday	23433	181021	204454	1320	205774
		167366	1313269	1480635	9240	1489875
	(43) Weekly average	23909	187610	211519	1320	212839

TABLE I.

(Illinois and Michigan Canal, Lockport.)

Serial Number.	Date. 1899.	.00001 c.c. +	—	?	.0001 c.c. +	—	?	.001 c.c. +	—	?	.01 c.c. +	—	?	.1 c.c. +	—	?
526	Aug. 29.....	..	..	..	..	..	..	..	..	..	1	0	..	1	0	..
876	Oct. 31......	..	..	..	4	0	..	2	0	..	..	..	..	..	..	..
914	Nov. 7......	0	4	..	1	0	1	..	..	..	..	..	..	..	..	..
950	Nov. 14.....	2	2	..	1	0	1	..	..	..	..	..	..	..	..	..
982	Nov. 21.....	1	1	..	4	0	..	..	..	..	..	..	..	..	..	..
1011	Nov. 28.....	0	2	..	2	1	1	..	..	..	..	..	..	..	..	..
1042	Dec. 5......	0	0	1	1	0	1	..	..	..	..	..	..	..	..	..
1072	Dec. 12.....	0	2	..	2	1	1	..	..	..	..	..	..	..	..	..
1110	Dec. 19.....	0	2	..	3	0	1	..	..	..	..	..	..	..	..	..
1146	Dec. 28.....	0	2	..	4	0	..	..	..	..	..	..	..	..	..	..
	1900															
1168	Jan. 3......	0	2	..	2	2	..	..	..	..	..	..	..	..	..	..
1199	Jan. 9......	0	2	..	3	1	..	2	0	..	..	..	..	..	..	..
1239	Jan. 16.....	1	0	..	2	0	..	..	..	..	..	..	..	..	..	..
1269	Jan. 23.....	0	4	..	4	0	..	..	..	..	..	..	..	..	..	..
1303	Jan. 30.....	0	4	..	1	3	..	..	..	..	..	..	..	..	..	..
1334	Feb. 6......	0	2	..	2	2	..	..	..	..	..	..	..	..	..	..
1457	Mar. 6......	0	4	..	1	3	..	..	..	..	..	..	..	..	..	..
1493	Mar. 13.....	0	2	..	2	1	1	1	0	..	..	..	..	..	..	..
1522	Mar. 20.....	..	..	..	1	2	..	1	2	..	..	..	..	..	..	..
1563	Mar. 28.....	1	2	..	3	0	..	..	..	..	..	..	..	..	..	..
1597	Apr. 3......	0	3	..	1	2	..	..	..	..	..	..	..	..	..	..
1636	Apr. 10.....	1	1	..	2	0	..	..	..	..	..	..	..	..	..	..
1675	Apr. 17.....	0	2	..	0	1	1	1	0	..	..	..	..	..	..	..
1717	Apr. 24.....	1	0	..	1	1	..	0	0	1	..	..	..	..	..	..
1753	May 2......	0	1	..	0	2	..	1	0	..	1	0	...	..	..	..
1786	May 8......	0	1	..	1	0	..	2	0	..	1	0	..	..	..	..
1817	May 15.....	0	1	..	1	0	..	1	0	..	..	..	..	..	..	..
1856	May 22.....	1	1	..	1	0	1	..	..	..	..	..	..	..	..	..
1895	May 29.....	0	2	..	1	1	..	..	..	..	..	..	..	..	..	..
1923	June 5......	0	2	..	1	0	1	..	..	..	..	..	..	..	..	..
1959	June 12.....	0	2	..	2	0	..	..	..	..	..	..	..	..	..	..
2000	June 19.....	..	..	..	0	1	..	0	1	..	1	0	..	1	0	..
2032	June 26.....	..	..	..	0	2	..	0	2	..	..	..	..	..	..	..

TABLE I-B.

(Drainage Canal, Kedzie Avenue.)

Serial Number.	Date. 1900.	.00001 +	—	?	.0001 +	—	?	.001 +	—	?	.01 c.c. +	—	?	.1 c.c. +	—	?
1789	May 8......	0	1	..	0	1	..	2	0	..	1	0	..	..	..	..
1816	May 15.....	0	1	..	0	1	..	0	1	..	..	..	..	..	..	..
1850	May 21.....	..	..	..	0	1	..	0	2	..	0	1	..	..	..	..
1889	May 28.....	..	..	..	0	1	..	0	2	..	0	1	..	..	..	..
1922	June 4......	..	..	..	..	..	..	0	0	1	1	0	..	2	0	..
1955	June 11.....	..	..	..	0	0	1	2	0	..	1	0	..	1	0	..
1992	June 18.....	..	..	..	1	0	..	1	0	..	1	0	..	1	0	..
2027	June 25.....	0	1	..	0	2	..	0	1	..	0	0	1	..	..	..

TABLE I-C.

(Drainage Canal, Lockport.)

Serial Number.	Date. 1900.	.00001 +	—	?	.0001 +	—	?	.001 +	—	?	.01 c.c. +	—	?	.1 c.c. +	—	?
1677	Apr. 17.....	..	..	..	0	1	..	0	1	1	1	0	..	..	..	..
1719	Apr. 24.....	..	..	..	0	1	..	1	1	..	0	1	..	..	..	..
1755	May 2......	..	..	..	0	1	..	0	2	..	1	0	..	..	..	..
1788	May 8......	0	1	..	1	0	..	1	0	1	0	0	1	..	..	..
1819	May 15.....	0	1	..	0	1	..	0	1	..	..	..	..	..	..	..
1858	May 22.....	..	..	..	0	1	..	0	1	1	0	1	..	..	..	..
1896	May 29.....	..	..	..	0	1	..	0	2	..	0	0	1	..	..	..
1925	June 5......	..	..	..	..	..	..	0	0	1	1	0	..	2	0	..
1961	June 12.....	..	..	..	0	1	..	1	0	..	1	0	..	1	0	..
2002	June 19.....	..	..	..	0	1	..	0	0	1	1	0	..	1	0	..
2034	June 26.....	..	..	..	0	1	..	0	0	1	1	0	..	1	0	..

TABLE II.

(Desplaines River, Lockport.)

Serial Number.	Date, 1899.	.01 c.c. +	—	?	.1 c.c. +	—	?	1 c.c +	—	?
383	Aug. 1..	..	..	..	0	1	..	0	1	..
418	Aug. 8..	..	..	..	0	1	..	1	0	..
498	Aug. 22..	..	..	..	0	1	..	..	..	..
527	Aug. 29..	..	..	..	0	1	..	1	0	..
877	Oct. 31..	..	..	..	1	0	..	..	..	..
915	Nov. 7..	..	..	..	0	0	1	0	0	1
951	Nov. 14..	..	..	..	0	1	..	0	0	1
1012	Nov. 28..	0	3	..	0	2	..	..	..	..

TABLE III.

(Kankakee River, Wilmington.)

Serial Number.	Date, 1899.	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?
415	Aug. 7	0	1	..	1	0	..
496	Aug. 22	1	0	..	..	..	..
528	Aug. 29	1	0	..	1	0	..
566	Sept. 4	0	1	..	1	0	..
875	Oct. 30	1	0	..	..	..	..
913	Nov. 6	0	0	1	0	1	..
981	Nov. 20	..	..	..	1	0	..

TABLE IV.

(Illinois River, Morris.)

Serial Number.	Date, 1899.	.0001 c.c. +	.0001 c.c. —	.0001 c.c. ?	.001 c.c. +	.001 c.c. —	.001 c.c. ?	.01 c.c. +	.01 c.c. —	.01 c.c. ?	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?
879	Oct. 31				2	1	..	2	0	..	..	..	..	..	..	..
917	Nov. 7	..	..	..	2	1	1	2	0	..	..	..	..	..	..	..
962	Nov. 15	0	2	..	3	0	..	3	0	1	..	..	..	..	..	..
985	Nov. 21	1	2	..	2	3	..	3	0	..	..	..	..	..	..	..
1014	Nov. 28	0	1	..	4	0	..	4	0	..	..	..	..	..	..	..
	1900															
1196	Jan. 7	..	..	..	1	0	1	3	0	1	2	0	..	..	..	..
1209	Jan. 10	..	..	..	1	0	..	1	0	..	..	..	..	..	..	..
1248	Jan. 19	..	..	..	1	0	..	2	0	..	..	..	..	..	..	..
1296	Jan. 27	..	..	..	1	2	..	2	0	..	2	0	..	..	..	..
1307	Jan. 30	..	..	..	0	2	..	2	2	..	2	0	..	..	..	..
1338	Feb. 6	..	..	..	..	..	..	0	4	..	2	0	..	..	..	..
1373	Feb. 13	..	..	..	0	2	..	1	3	..	2	0	..	..	..	..
1400	Feb. 20	..	..	..	0	2	..	1	2	1	4	0	..	..	..	..
1461	Mar. 8	..	..	..	1	1	..	3	1	..	2	0	..	..	..	..
1500	Mar. 15	..	..	..	0	1	..	1	1	1	1	1	..	..	..	..
1526	Mar. 20	..	..	..	0	2	..	1	0	1	2	0	..	..	..	..
1571	Mar. 29	..	..	..	0	1	..	1	1	..	2	0	..	..	..	..
1602	Apr. 4	..	..	..	0	1	..	1	1	..	0	1	..	..	..	..
1640	Apr. 10	..	..	..	1	0	..	2	0	..	1	0	..	..	..	..
1680	Apr. 17	..	..	..	0	1	..	2	0	..	1	0	..	..	..	..
1715	Apr. 23	..	..	..	0	1	..	0	1	1	1	0	..	..	..	..
1758	May 2	..	..	..	..	..	..	0	1	..	0	1	1	1	0	..
1784	May 8	..	..	..	..	..	..	0	1	..	2	0	..	1	0	..
1822	May 16	..	..	..	..	..	..	0	1	..	1	1	..	1	0	..
1854	May 22	..	..	..	..	..	..	0	1	..	0	2	..	1	0	..
1893	May 29	..	..	..	..	..	..	0	1	..	1	1	..	2	0	..
1928	June 5	..	..	..	..	..	..	1	0	..	2	0	..	0	1	..
1962	June 12	..	..	..	..	..	..	0	1	..	2	0	..	1	0	..
1996	June 19	..	..	..	..	..	..	0	1	..	2	0	..	1	0	..
2037	June 27	..	..	..	..	..	..	0	1	..	2	0	..	1	0	..

TABLE V.

(Fox River, Ottawa.)

Serial Number.	Date, 1899.	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?	5 c.c. +	5 c.c. —	5 c.c. ?
384	Aug. 1	0	1	..	0	1	..	..	..	..
420	Aug. 8	0	1	..	0	1	..	..	..	..
500	Aug. 22	0	1	..	..	..	..	..	..	..
529	Aug. 29	0	1	..	0	0	1	..	..	..
881	Oct. 31	0	1	..	1	0	..	..	..	..
918	Nov. 7	0	1	..	0	1	..	..	..	..
953	Nov. 14	0	1	..	0	1	..	..	..	..
986	Nov. 21	0	1	..	0	1	..	..	..	..
1015	Nov. 28	0	1	..	0	1	..	..	..	..
	1900									
1282	Jan. 26	0	2	1	1	2	..	..	..	..
1528	Mar. 21	0	3	..	0	3	..	..	..	..
1568	Mar. 28	..	..	..	0	2	1	2	0	..
1603	Apr. 4	1	0	..	2	0	..	1	0	..
1642	Apr. 11	..	..	..	2	0	..	1	0	..
1681	Apr. 18	0	1	..	0	2	..	1	0	..
1722	Apr. 25	0	1	..	0	1	1	0	0	1
1759	May 2	0	1	..	0	2	..	1	0	..
1790	May 9	1	0	..	2	0	..	1	0	..
1823	May 16	0	1	..	0	2	..	1	0	..
1859	May 23	0	1	..	0	2	..	0	1	..
1930	June 6	0	1	..	0	2	..	0	0	1
1963	June 12	0	1	..	0	1	1	1	0	..
1997	June 19	0	1	..	0	2	..	1	0	..
2035	June 26	0	1	..	1	1	..	1	0	..

TABLE VI.

(Illinois River, Ottawa.)

Serial Number.	Date. 1899.	.01 c.c.			.1 c.c.			1 c.c.			5 c.c.		
		+	—	?	+	—	?	+	—	?	+	—	?
385	Aug. 1	..	..	..	0	1	..	0	1	..	..	..	..
421	Aug. 8	..	..	..	0	1	..	1	0	..	..	..	..
501	Aug. 22	..	..	..	0	1	..	..	..	..	..	..	..
530	Aug. 29	..	..	..	0	1	..	0	0	1	..	..	..
830	Oct. 31	0	1	..	1	0	2	..	..	..	..	..	..
919	Nov. 7	0	2	..	1	2	1	1	0	1	..	..	..
934	Nov. 14	0	2	..	2	2	..	2	0	..	..	..	..
987	Nov. 21	1	1	..	1	0	3	2	0	..	..	..	..
1016	Nov. 23	0	2	..	0	3	1	0	0	2	..	..	..
1076	Dec. 13	1	1	..	3	1	..	2	0	..	..	..	..
1130	Dec. 22	1	0	..	1	0	..	1	0	..	..	..	..
1153	Dec. 29	1	0	1	1	0	3	0	0	2	..	..	..
	1900												
1174	Jan. 5	1	0	..	3	0	1	2	0	..	..	..	..
1221	Jan. 12	0	1	..	2	0	..	1	0	..	..	..	..
1250	Jan. 19	0	2	..	3	0	1	2	0	..	..	..	..
1283	Jan. 26	0	0	2	4	0	..	1	0	..	..	..	..
1340	Feb. 6	..	..	..	1	3	..	2	0	..	..	..	..
1402	Feb. 21	..	..	..	0	2	..	3	1	..	..	..	..
1455	Mar. 6	..	..	..	0	4	..	0	19	1	..	..	..
1490	Mar. 13	0	2	..	2	2	..	2	0	..	..	..	..
1529	Mar. 21	0	1	1	2	0	..	1	1	..	..	..	..
1569	Mar. 28	0	2	..	1	1	..	1	1	..	..	..	..
1604	Apr. 4	0	1	..	0	2	..	1	0	..	..	..	..
1643	Apr. 11	0	1	..	0	2	..	0	1	..	..	..	..
1682	Apr. 18	..	..	..	1	1	..	0	0	2	..	..	..
1723	Apr. 25	..	..	..	0	2	..	0	2	..	..	..	..
1760	May 2	0	1	..	0	2	..	0	0	1	..	..	..
1791	May 9	..	..	..	1	0	..	2	0	..	..	..	..
1824	May 16	..	..	..	1	0	..	0	0	2	1	0	..
1860	May 23	..	..	..	0	0	1	0	0	2	0	0	1
1931	June 6	0	1	..	0	1	..	0	0	2	0	00	1
1964	June 12	1	0	..	0	0	1	2	0	..	1	0	..
1998	June 19	0	1	..	1	0	..	1	0	..	1	0	..
2036	June 26	0	1	..	0	1	..	1	1	..	1	0	..

TABLE VII.

(Big Vermilion, La Salle.)

Serial Number.	Date, 1899.	.1 c.c.			1 c.c.		
		+	—	?	+	—	?
388	Aug. 2	0	5	..	0	1	..
423	Aug. 9	..	..	..	0	0	1
502	Aug. 23	0	1	..	0	0	1
533	Aug. 30	0	1	..	0	1	..
882	Nov. 1	1	0	..	1	0	..
920	Nov. 8	..	..	..	0	1	..
959	Nov. 15	..	..	..	0	1	..
988	Nov. 22	0	1	..	1	0	..
1017	Nov. 28	0	1	..	1	0	..

TABLE VIII.

(Illinois River, La Salle.)

Serial Number.	Date. 1899.	.1 c.c.			1 c.c.		
		+	—	?	+	—	?
389	Aug. 2	..	..	..	0	0	1
424	Aug. 9	1	0	..	0	0	1
503	Aug. 23	0	1	..	0	0	1
534	Aug. 30	0	1	..	0	0	1
883	Nov. 1	1	0	..	1	0	..
960	Nov. 15	0	1	..	1	0	..
989	Nov. 22	0	1	..	0	0	1
1018	Nov. 28	0	1	..	1	0	..

TABLE IX.

(Illinois River, Henry.)

Serial Number.	Date, 1899.	.01 c.c.			.1 c.c.			1 c.c.		
		+	—	?	+	—	?	+	—	?
107	June 7	..	..	..	..	..	..	0	1	..
134	June 14	..	..	..	..	..	..	0	1	..
173	June 21	..	..	..	0	1	..	0	1	..
212	June 28	..	..	..	0	1	..	0	1	..
583	Sept. 7	..	..	..	0	0	1	0	0	1
616	Sept. 13	..	..	..	1	0	..	1	0	..
652	Sept. 20	..	..	..	1	0	..	1	0	..
690	Sept. 27	0	1	..	0	1	..	..	..	..
1116	Dec. 20	..	..	..	..	..	..	4	0	..
	1900									
1170	Jan. 4	..	..	..	1	1	..	1	0	1
1207	Jan. 10	..	..	..	..	..	..	2	2	..
1246	Jan. 17	..	..	..	1	3	..	3	1	..

TABLE X.

(Illinois River, Averyville.)

Serial Number.	Date. 1899.	.01 c.c. +	.01 c.c. —	.01 c.c. ?	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?
119	June 9	..	..	..	..	..	..	0	1	..
136	June 12	..	..	..	..	..	..	0	1	..
174	June 21	..	..	..	0	1	..	0	1	..
213	June 28	..	..	..	..	..	..	0	1	..
387	Aug. 2	..	..	..	..	..	..	1	0	..
580	Sept. 6	..	..	..	1	0	..	1	0	..
617	Sept. 13	..	..	..	0	1	..	0	1	..
663	Sept. 20	..	..	..	0	1	..	0	1	..
691	Sept. 27	..	..	..	0	1	..	0	1	..
	1900									
1275	Jan. 24	0	4	..	0	2	..	..	..	..
1312	Jan. 31	..	..	..	0	2	..	2	2	..
1344	Feb. 7	..	..	..	0	2	..	0	1	3
1380	Feb. 14	..	..	..	0	0	2	3	0	1
1406	Feb. 21	..	..	..	0	1	1	4	0	..
1437	Feb. 28	..	..	..	1	1	..	2	2	..
1459	Mar. 7	..	..	..	0	2	..	2	2	..
1498	Mar. 14	..	..	..	1	0	1	0	2	1
1533	Mar. 21	..	..	..	0	1	2	1	0	2
1570	Mar. 28	..	..	..	0	2	1	3	0	..
1608	Apr. 4	..	..	..	0	1	..	1	0	1
1647	Apr. 11	..	..	..	0	0	1	0	0	2
1687	Apr. 18	..	..	..	0	2	..	0	2	..
1727	Apr. 25	..	..	..	0	1	..	0	1	1
1765	May 2	..	..	..	0	1	..	0	1	1
1795	May 9	..	..	..	0	1	..	0	1	1
1832	May 17	..	..	..	0	0	1	1	0	1
1864	May 23	..	..	..	0	1	..	0	0	2
1901	May 29	..	..	..	1	1	..	2	0	..
1935	June 6	..	..	..	0	1	..	0	1	1
1969	June 13	..	..	..	0	1	..	0	2	..
2006	June 20	..	..	..	0	1	..	2	0	..
2041	June 27	..	..	..	0	1	..	0	2	..

TABLE XI.

(Illinois River, Wesley City.)

Serial Number.	Date. 1899.	.0001 c.c. +	.0001 c.c. —	.0001 c.c. ?	.01 c.c. +	.01 c.c. —	.01 c.c. ?	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?
120	June 9	..	..	..	..	..	..	0	1	..	0	1	..
136	June 14	..	..	..	..	..	..	0	1	..	0	1	..
177	June 21	..	..	..	..	..	..	1	0	..	1	0	..
214	June 28	..	..	..	..	..	..	1	0	..	1	0	..
581	Sept. 6	..	..	..	0	0	1	1	0	..	..	..	..
618	Sept. 13	..	..	..	0	0	1	0	0	1	..	..	..
692	Sept. 27	0	1	..	0	1	..	0	0	1	..	..	..
	1900												
1345	Feb. 7	..	..	..	0	2	..	1	3	..	0	0	2
1381	Feb. 14	..	..	..	0	2	..	1	2	1	2	0	..
1411	Feb. 23	..	..	..	0	2	..	1	3	..	2	0	..
1460	Mar. 7	..	..	..	0	2	..	1	1	2	1	1	..
1534	Mar. 22	..	..	..	0	2	..	2	0	..	2	0	..
1581	Mar. 30	..	..	..	0	2	..	0	1	..	1	1	..
1610	Apr. 5	..	..	..	0	1	..	0	2	..	1	0	..
1648	Apr. 11	..	..	..	0	0	1	0	2	..	0	0	1
1689	Apr. 18	..	..	..	0	1	..	0	2	..	..	..	..
1728	Apr. 25	..	..	..	0	1	..	0	0	1	1	1	..
1767	May 3	..	..	..	0	1	..	0	2	..	0	0	1
1796	May 9	..	..	..	0	1	..	1	0	1	1	0	..
1829	May 16	..	..	..	1	0	..	2	0	..	1	0	..
1866	May 23	0	1	..	0	1	..	1	0	..	..	..	..
1902	May 31	1	0	..	1	0	1	1	0	..	..	..	..
1938	June 7	0	1	..	0	1	..	0	2	..	1	0	..
1973	June 14	0	1	..	0	1	..	0	2	..	1	0	..
2008	June 21	0	1	..	1	1	..	1	0	..	..	..	..
2042	June 28	0	1	..	0	2	..	0	1	..	..	..	..

TABLE XII.

(Illinois River, Havana.)

Serial Number.	Date. 1899.	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?
115	June 7	..	..	..	1	0	..
138	June 14	..	..	..	1	0	..
178	June 21	..	..	..	1	0	..
221	June 29	..	..	..	1	0	..
589	Sept. 7	1	0	..	1	0	..
625	Sept. 14	0	1	..	0	0	1
659	Sept. 21	1	0	..	1	0	..
699	Sept. 29	0	1	..	0	1	..

TABLE XIII.

(Sangamon River, Chandlerville.)

Serial Number.	Date, 1899.	.01 c.c. +	.01 c.c. —	.01 c.c. ?	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?
116	June 8	..	..	..	..	..	..	0	1	..
182	June 22	..	..	..	..	..	..	1	0	..
626	Sept. 14	..	..	..	0	0	1	0	0	1
660	Sept. 21	..	..	..	1	0	..	1	0	..
715	Sept. 29	..	..	..	1	0	..	1	0	..
	1900									
1276	Jan. 25	..	..	..	1	3	..	4	0	..
1315	Feb. 1	..	..	..	0	4	..	0	4	..
1355	Feb. 3	..	..	..	2	0	..	4	0	..
1384	Feb. 15	..	..	..	2	1	1	1	0	1
1438	Mar. 2	..	..	..	0	1	3	3	1	..
1470	Mar. 8	..	..	..	3	1	..	2	0	2
1508	Mar. 15	..	..	..	1	1	1	0	3	..
1544	Mar. 22	..	..	..	3	0	..	3	0	..
1572	Mar. 29	0	2	..	0	2	..	0	1	1
1613	Apr. 5	0	2	..	1	1	..	1	1	..
1652	Apr. 12	0	2	..	0	0	2	2	0	..
1692	Apr. 19	0	1	..	0	1	..	2	0	..
1731	Apr. 26	0	2	..	0	1	1	0	0	2
1770	May 3	0	1	..	2	0	..	2	0	..
1805	May 10	1	0	..	2	0	..	1	0	..
1839	May 17	1	0	..	1	0	..	2	0	..
1875	May 24	1	0	1	2	0	..	2	0	..
1911	May 31	..	..	..	1	0	..	1	0	..
1945	June 7	0	2	..	0	2	..	1	0	..
1981	June 14	0	1	..	0	2	..	1	0	..
2011	June 21	2	0	..	0	1	1	2	0	..
2051	June 28	0	2	..	0	1	1	1	0	..

TABLE XIV.

(Illinois River, Grafton.)

Serial Number.	Date, 1899.	.01 c.c. +	.01 c.c. —	.01 c.c. ?	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?	5 c.c. +	5 c.c. —	5 c.c. ?
117	June 8	..	..	..	..	..	..	0	1	..	..	..	..
184	June 22	..	..	..	..	..	..	0	1	..	..	..	..
222	June 30	..	..	..	..	..	..	0	1	..	..	..	..
591	Sept. 7	..	..	..	0	1	..	0	1	..	..	..	..
628	Sept. 14	..	..	..	1	0	..	1	0	..	..	..	..
662	Sept. 21	..	..	..	1	0	..	1	0	..	..	..	..
701	Sept. 29	..	..	..	0	1	..	1	0	..	..	..	..
996	Nov. 23	1	1	..	2	0	..	2	0	..	..	..	..
1025	Dec. 1	0	1	..	1	0	..	1	0	..	..	..	..
1057	Dec. 6	0	1	..	0	1	..	1	0	..	..	..	..
1098	Dec. 15	..	..	..	0	1	..	0	1	1	..	..	..
1127	Dec. 22	..	..	..	0	0	1	1	0	1	..	..	..
1156	Dec. 29	..	..	..	0	1	..	0	0	2	..	..	..
	1900												
1187	Jan. 5	..	..	..	0	1	..	0	2	..	..	..	..
1217	Jan. 10	..	..	..	0	1	..	0	1	1	..	..	..
1261	Jan. 19	..	..	..	0	4	..	0	2	2	..	..	..
1287	Jan. 26	..	..	..	1	1	..	2	1	1	..	..	..
1317	Feb. 1	0	2	..	0	2	..	2	2	..	..	..	..
1356	Feb. 8	..	..	..	0	1	1	2	1	..	..	..	..
1386	Feb. 15	..	..	..	1	0	1	2	0	2	..	..	..
1408	Feb. 22	..	..	..	0	2	..	3	0	1	..	..	..
1484	Mar. 9	..	..	..	1	1	..	4	0	..	..	..	..
1509	Mar. 16	..	..	..	2	0	..	4	0	..	..	..	..
1536	Mar. 22	..	..	..	0	3	..	0	1	2	..	..	..
1579	Mar. 29	..	..	..	0	3	..	2	0	1	..	..	..
1615	Apr. 5	..	..	..	2	0	..	1	0	1	..	..	..
1654	Apr. 12	..	..	..	0	1	..	1	0	1	..	..	..
1693	Apr. 19	..	..	..	0	1	..	1	0	1	..	..	..
1732	Apr. 26	..	..	..	0	1	..	1	1	..	..	..	..
1771	May 3	..	..	..	1	0	..	2	0	..	..	..	..
1806	May 10	..	..	..	1	0	..	2	0	..	..	..	..
1841	May 17	..	..	..	1	0	..	2	0	..	..	..	..
1877	May 24	..	..	..	1	0	..	2	0	..	..	..	..
1912	May 31	..	..	..	0	1	..	0	2	..	..	..	..
1946	June 8	..	..	..	0	1	..	0	0	1	0	0	1
1983	June 15	..	..	..	0	1	..	1	0	..	1	0	..
2019	June 22	..	..	..	0	1	..	2	0	..	0	0	1
2053	June 29	..	..	..	1	0	..	2	0	..	1	0	..

TABLE XV.

(Mississippi River, Grafton.)

Serial Number.	Date, 1899.	.01 c.c.			.1 c.c.			1 c.c.			5 c.c.		
		+	—	?	+	—	?	+	—	?	+	—	?
118	June 8	..	..	..	..	..	..	0	1	..	..	..	..
185	June 22	..	..	..	0	1	..	..	..	..	..	..	..
223	June 30	..	..	..	..	..	..	1	0	..	..	..	..
592	Sept. 7	..	..	..	0	1	..	0	1	..	..	..	..
629	Sept. 14	..	..	..	0	1	..	0	0	1	..	..	..
663	Sept. 21	..	..	..	1	0	..	1	0	..	..	..	..
702	Sept. 29	..	..	..	0	1	..	1	0	..	..	..	..
1026	Dec. 1	0	1	..	0	1	..	1	0	..	..	..	..
1058	Dec. 6	0	1	..	0	1	..	0	0	1	..	..	..
1099	Dec. 15	..	..	..	0	1	..	1	1	..	..	..	..
1128	Dec. 22	..	..	..	0	1	..	1	0	1	..	..	..
1157	Dec. 29	..	..	..	0	1	..	0	2	..	..	..	..
	1900												
1188	Jan. 5	..	..	..	0	1	..	1	1	..	..	..	..
1218	Jan. 10	..	..	..	0	1	..	1	1	..	..	..	..
1262	Jan. 19	..	..	..	0	4	..	1	2	1	..	..	..
1286	Jan. 26	..	..	..	1	1	..	3	1	..	..	..	.
1318	Feb. 1	..	..	..	0	2	..	0	2	2	..	..	..
1357	Feb. 8	..	..	..	1	1	..	1	1	2	..	..	..
1387	Feb. 15	..	..	..	1	1	..	3	1	..	..	..	..
1409	Feb. 22	..	..	..	0	2	..	2	0	2	..	..	..
1435	Mar. 9	..	..	..	0	2	..	2	1	..	..	..	..
1510	Mar. 16	..	..	..	1	1	..	3	0	1	..	..	..
1537	Mar. 22	..	..	..	1	1	1	3	0	..	.	..	..
1580	Mar. 29	..	..	..	0	3	..	1	2	..	..	..	..
1616	Apr. 5	..	..	..	1	1	..	0	1	1	..	..	..
1655	Apr. 12	..	..	..	0	2	..	1	1	..	..	..	..
1694	Apr. 19	..	..	..	0	1	..	0	2	..	..	..	..
1733	Apr. 26	..	..	..	0	1	..	3	0	..	..	..	..
1772	May 3	..	..	..	0	1	..	1	0	1	..	..	..
1807	May 10	..	..	..	1	0	..	2	0	..	..	..	..
1878	May 24	..	..	..	1	0	..	1	0	1	..	..	..
1913	May 31	..	..	..	1	0	..	0	0	1	..	..	..
1947	June 8	..	..	..	0	0	1	0	0	1	1	0	..
1984	June 14	..	..	..	0	1	..	0	0	1	1	0	..
2019	June 22	..	..	..	0	1	..	0	2	..	0	1	..
2054	June 29	..	..	..	0	1	..	2	0	..	1	0	..

TABLE XVI.

(Mississippi River, Cross-Section at Alton.)

Serial Number.	Date, 1899.	.1 c.c.			1 c.c.		
		+	—	?	+	—	?
	East Bank—						
248	July 6	0	1	..	0	1	..
284	July 13	0	1	..	0	0	1
319	July 20	0	1	..	0	1	..
356	July 27	0	1	..	0	1	..
736	Oct. 5	0	1	..	0	1	..
773	Oct. 12	0	1	..	1	0	..
846	Oct. 26	0	1	..	0	1	..
	East Center—						
249	July 6	0	1	..	0	1	..
285	July 13	0	0	1	0	0	1
320	July 20	0	1	..	0	1	..
357	July 27	1	0	..	1	0	..
737	Oct. 5	0	1	..	0	1	..
774	Oct. 12	0	1	..	0	0	1
847	Oct. 26	0	1	..	0	1	..
	Center—						
250	July 6	0	1	..	0	1	..
286	July 13	0	1	..	1	0	..
321	July 20	0	1	..	0	1	..
358	July 27	0	1	..	0	1	..
738	Oct. 5	0	1	..	0	1	..
775	Oct. 12	0	1	..	0	1	..
848	Oct. 26	1	0	..	0	0	1
	West Center—						
251	July 6	0	1	..	1	0	..
287	July 13	1	0	..	0	1	..
322	July 20	0	1	..	0	1	..
359	July 27	0	1	..	0	1	..
739	Oct. 5	0	1	..	0	1	..
776	Oct. 12	0	1	..	0	0	1
849	Oct. 26	1	0	..	1	0	..
	West Bank—						
252	July 6	0	1	..	0	1	..
288	July 13	0	1	..	0	1	..
323	July 20	0	1	..	1	0	..
360	July 27	0	1	..	1	0	..
740	Oct. 5	0	1	..	0	1	..

TABLE XVII.

(Missouri River, West Alton.)

Serial Number.	Date, 1899.	.01 c.c. +	.01 c.c. —	.01 c.c. ?	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?
376	July 28	..	..	..	0	1	..	0	1	..
671	Sept. 23	..	..	..	0	1	..	0	0	1
714	Sept. 29	..	..	..	0	0	1	0	0	1
749	Oct. 6	..	..	..	0	1	..	1	0	..
789	Oct. 13	..	..	..	0	1	..	0	1	..
869	Oct. 27	..	..	..	0	1	..	0	1	..
	1900									
1189	Jan. 5	..	..	..	0	2	..	0	4	..
1235	Jan. 10	..	..	..	0	1	..	1	0	..
1263	Jan. 19	..	..	..	1	3	..	1	2	1
1295	Jan. 26	..	..	..	0	2	..	3	1	..
1320	Feb. 2	..	..	..	0	2	..	0	4	..
1358	Feb. 8	..	..	..	0	2	..	2	2	..
1388	Feb. 15	..	..	..	0	2	..	0	3	1
1410	Feb. 22	..	..	..	0	2	..	0	4	..
1439	Mar. 2	..	..	..	0	4	..	4	4	..
1471	Mar. 8	..	..	..	0	2	..	2	1	1
1499	Mar. 14	..	..	..	2	0	..	0	1	2
1556	Mar. 23	..	..	..	0	0	1	2	0	..
1594	Mar. 30	..	..	..	2	0	..	2	0	..
1609	Apr. 4	..	..	..	2	0	..	2	0	..
1650	Apr. 11	..	..	..	1	0	..	2	0	..
1690	Apr. 18	0	1	..	0	1	1	1	1	..
1721	Apr. 25	..	..	..	0	1	..	2	0	..
1766	May 3	..	..	..	0	0	1	1	0	1
1793	May 10	..	..	..	1	0	..	1	0	..
1831	May 16	0	1	..	1	0	1	..	..	..
1865	May 23	1	0	..	1	0	..	1	0	..
1910	May 31	0	1	..	2	0	..	1	0	..
1937	June 7	..	..	..	2	0	..	2	0	..
1970	June 13	..	..	..	1	0	..	2	0	..
2007	June 20	1	0	..	2	0	..	1	0	..
2050	June 28	2	0	..	1	0	..	1	0	..

TABLE XVIII.

(Mississippi River, Intake, Tower, St. Louis Waterworks, Mitchell.)

Serial Number.	Date, 1899.	.01 c.c. +	.01 c.c. —	.01 c.c. ?	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?	5 c.c. +	5 c.c. —	5 c.c. ?
295	July 14	..	..	..	1	0	..	1	0	..	..	..	..
330	July 21	..	..	..	0	1	..	1	0	..	..	..	..
373	July 28	..	..	..	1	0	..	1	0	..	..	..	..
743	Oct. 6	..	..	..	0	1	..	0	0	1	..	..	..
859	Oct. 27	..	..	..	0	1	..	0	1	..	..	..	..
	1900												
1299	Jan. 27	..	..	..	1	1	..	1	1	2	..	..	..
1361	Feb. 9	..	..	..	1	0	1	4	0	..	..	..	..
1426	Feb. 24	..	..	..	1	1	..	1	0	3	..	..	..
1474	Mar. 9	..	..	..	0	0	1	1	0	1	..	..	..
1547	Mar. 23	..	..	..	3	0	..	2	0	1	..	..	..
1585	Mar. 30	..	..	..	0	2	..	1	1	..	1	0	..
1624	Apr. 6	..	..	..	0	1	..	1	1	..	..	..	..
1658	Apr. 13	..	..	..	0	1	..	2	0	..	..	..	..
1702	Apr. 20	..	..	..	1	1	..	0	0	2	..	..	..
1810	May 11	..	..	..	1	0	..	2	0	..	0	0	1
1845	May 18	..	..	..	0	0	1	0	0	2	0	0	1
1885	May 25	..	..	..	1	0	6	0	0	2	..	..	..
1917	June 1	..	..	..	1	0	..	2	0	..	..	..	..
1950	June 8	..	..	..	0	0	1	1	0	1	..	..	..
1987	June 15	..	..	..	1	0	..	2	0	..	..	..	..
2022	June 22	1	0	..	1	0	..	2	0	..	..	..	..
2057	June 29	1	0	..	2	0	..	1	0	..	..	..	..

TABLE XIX.

(St. Louis Tap Water.)

Serial Number.	Date, 1899.	.1 c.c. +	.1 c.c. —	.1 c.c. ?	1 c.c. +	1 c.c. —	1 c.c. ?	5 c.c. +	5 c.c. —	5 c.c. ?
265	July 7	0	1	..	1	0	..	..	..	..
298	July 15	0	1	..	1	0	..	..	..	..
333	July 22	0	1	..	1	0	..	..	..	..
365	July 28	0	1	..	0	0	1	..	..	..
781	Oct. 13	0	1	..	0	1	..	..	..	..
	1900									
1289	Jan. 26	1	1	..	1	2	1	..	..	..
1347	Feb. 7	1	1	..	0	3	1	..	..	..
1364	Feb. 10	0	2	..	0	4	..	..	..	..
1376	Feb. 13	0	2	..	0	3	1	..	..	..
1383	Feb. 15	0	4	..	0	4	..	1	0	..
1395	Feb. 17	0	2	..	0	3	1	..	..	..
1413	Feb. 23	0	2	..	0	4	..	1	1	..

1448	Mar. 5	0	2	..	0	3	1	..	..	..
1476	Mar. 9	0	1	..	0	1	1	..	..	..
1514	Mar. 17	0	1	..	2	0	..	1	0	..
1549	Mar. 23	0	3	..	2	0	..	1	0	..
1587	Mar. 30	0	2	..	1	1	..	1	0	..
1626	Apr. 6	0	1	..	0	2	..	..	..	..
1660	Apr. 13	..	..	..	0	2	..	1	0	..
1704	Apr. 21	1	1	..	1	1	..	..	..	..
1743	Apr. 27	0	1	..	0	1	1	1	0	..
1778	May 4	0	1	..	1	1	..	..	..	..
1812	May 11	0	1	..	2	0	..	1	0	..
1847	May 18	0	1	..	0	0	2	1	0	..
1879	May 25	1	0	..	0	2	..	..	..	..
1914	June 1	0	1	..	1	1	..	1	0	..
1952	June 8	0	0	1	1	1	..	..	..	..
1989	June 15	0	1	..	1	1	..	..	..	..
2025	June 23	1	0	..	1	0	1	..	..	..
2060	June 29	0	1	..	1	0	1	..	..	..

I. PRINCIPAL STATIONS ON THE ILLINOIS RIVER.

	.00001 c.c.		.0001 c.c.		.001 c.c.		.01 c.c.		.1 c.c.	
Collecting Stations.	No. of days water exam'd.	No. of days B. coli found.	No. of days water exam'd.	No. of days B. coli found.	No. of days water exam'd.	No. of days B. coli found.	No. of days water exam'd.	No. of days B. coli found.	No. of days water exam'd.	No. of days B. coli found.
Illinois and Michigan Canal, Lockport	28	7	32	28	11	8	4	4	2	2
Illinois River, Morris	..	..	3	1	20	11	30	20	23	20
Illinois River, Ottawa	..	..	..	..	..	..	22	6	34	19
Illinois River, Averyville	..	..	..	..	..	..	1	0	27	4
Illinois River, Wesley City	..	..	..	..	7	1	22	3	26	13
Illinois River, Grafton	..	..	..	..	..	..	4	1	35	13

I.

Illinois River at Averyville and Grafton, Compared with Tributaries and with the Mississippi (Grafton) and Missouri (West Alton) Rivers.

	.01 c.c.		.1 c.c.		1 c.c.		5 c.c.	
Collecting Stations.	No. of days water exam'd.	No. of days B. coli found.	No. of days water exam'd.	No. of days B. coli found.	No. of days water exam'd.	No. of days B. coli found.	No. of days water exam'd.	No. of days B. coli found.
Illinois River, Averyville	1	0	27	4	31	13	..	..
Illinois River, Grafton	4	1	35	13	38	26	4	2
Mississippi River, Grafton	2	0	34	10	35	23	4	3
Desplaines River	..	..	8	1	5	2	..	..
Kankakee River	..	..	6	3	5	4	..	..
Fox River	..	..	22	2	23	6	13	10
Big Vermilion River	..	..	5	1	9	3	..	..
Sangamon River	13	4	25	14	27	21	..	..
Missouri River	6	3	32	13	31	21	..	..

II.

Total, Illinois River (Averyville and Grafton)	..	..	62	17	69	39	..	..
Total, tributaries of Illinois River	..	..	66	21	69	36	..	..
Mississippi and Missouri Rivers	..	..	66	23	66	44	..	..

TABLE 1.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, BRIDGEPORT.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Residue on Evaporation: Loss on Ig'n: Tot'l	Residue on Evaporation: Loss on Ig'n: Dis-solv'd	Residue on Evaporation: Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dis-solv'd	Nitrogen as Ammonia: Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4974	April 27	April 28	*	Cons'd	M. F.5	Gas'y	562.8	501.	58.8	84.	61.6	22.4	B.	102.	39.	21.	18.	13.6	2.4	1.44	.96	5.2	2.57	2.63	.005	.15	....	....	......	....	....
5030	May 11	May 15	*	Much	M. F.15	"	771.4	615.6	158.8	118.4	58.4	60.	B.	137.5	45.6	24.2	21.4	16.92	2.4	1.28	1.12	5.21	2.73	2 48	.....	.17	....	....	......	....	....
5111	" 29	" 31	*	Cons'd	M. F.5	"	1201.6	1000.	201.6	113.6	63.2	50.4	B.	308.	57.7	25.	32.7	40.	4.96	1.76	3.2	10.73	1.69	9.04	.004	.4	4.5	5.5	12.7	....	....
5238	June 19	June 20	*	"	M. F.5	"	610.8	510.	100.8	45.2	34.4	10.8	B.	130.	47.5	26.	21.5	18.4	2.96	1.161	1.796	5.88	2.6	3.28	.002	.21	4.8	10.5	26.	+	1,035.500
5329	July 3	July 4	*	"	M. F.15	"	175.2	405.6	69.6	64.	51.	10.	B.	86.	36.	4.8	31.2	12.8	2.24	.64	1.6	4.92	2.28	2.64	.....	.12	5.3	14.	21.	....	2,355.000
5129	" 17	" 18	*	"	M. F.15	"	685.2	574.	111.2	90.	18.8	41.2	B.	96.5	27.7	17.6	10.1	10.	1.44	.48	.96	3.32	1.272	2.048	.45	1.2	7.	6.	21.	....	4.500.000
5475	" 21	" 25	*	"	M. F.6	"	610 4	541.	66.4	84.8	72.	12.8	Gh.	129.	43.2	24.4	18.8	19.8	1.92	1.056	.864	3.96	2.2	1.76	.008	.21	5.4	25.5	27.	....	4,831.666
5833	Sept. 11	Sept. 12	*	"	M. F.3	"	520.	450.	70.	43.6	41 6	2.	B.	120.	35.8	17.5	18.3	17.6	2.16	1.04	1.12	3.8	1.88	1.92	.002	.2	5.	12.	19.	+	1.070.000
5878	" 18	" 19	*	Much	M. F.5	"	531.4	485.6	48.8	70.	47.6	22.4	B.	120.	40.9	22.5	18.4	20.8	2.64	1.088	1.552	4.44	2.76	1.68	.004	.2	5.	9.	15.	—	4,770.000
5931	" 25	" 26	*	"	M. F.6	"	564.4	.....	......	59.6	....	....	B.	130.	33.	21.1	11.9	18.8	2.16	1.28	.88	4.74	2.58	2.16	.004	.24	5.2	13.	19.	+	1.610.000
5980	Oct. 2	Oct. 3	*	"	M. F.5	"	491.2	438.	53 2	71.4	26.4	48.	B.	107.	38.1	17.3	20.8	14.	2.16	1.04	1.12	4 42	1.7	2.72	.006	.16	4.7	13.	10.	+	2.515.000
6054	" 9	" 12	*	"	M. F.8	"	375.2	334.4	40.8	24.	22.4	1.6	B.	73.5	23.3	18.5	4.8	10.8	1.6	.544	1.056	2.9	1.224	1.676	.007	.2	5.6	10.5	18.	+	3,240.000
6075	" 16	" 17	*	"	M. F.5	"	580.8	485.2	95 6	64.	22.4	41.6	B.	156.	31.7	18.8	15.9	18.4	2.24	1.088	1.152	3.24	1.88	1.36	.008	.28	5.6	7.	10.	+	1.425,000
6140	" 23	" 21	*	"	M. F.4	"	441.	392.4	51.6	24.8	23.2	1.6	B.	99.	22.9	10.8	12.1	14.	1 6	1.2	.4	2.76	1.8	.96	.002	.28	5.	10.	20.	+	1.420.000
6187	" 30	" 31	*	"	M. F.3	"	183 6	403.6	80.	38.	10.4	27.6	G.	94.5	35 7	15.4	20.3	12.	2.72	.608	2.112	5.16	1.16	4.	.005	.16	5.5	0.	10.	....	1.500.000
6234	Nov. 6	Nov. 7	*	Cons'd	M. F.3	"	426.4	390.8	35.6	22.	20.8	1.2	G.	79.	21.3	13.2	11.1	10.	2.16	1.04	1.12	3.24	2.28	.96	.008	.36	5.6	8.	11.	+	4,790.000
6270	" 13	" 14	*	"	M. F.4	"	.....	.....	......	.....	....	....	......	138.	29.9	15.9	14.	18.	2.56	.8	1.76	5.16	2.36	2.8	.006	.24	5.	6.5	4.	+	1,960.000
6333	" 20	" 21	§	V.M'ch	V.M.F.5	"	714.4	563.6	150 8	66.	27.2	38.8	B.	150.5	37.	11.	23.	24.	3.2	1.44	1.76	5.32	2.6	2.72	.002	.12	5.	5.5	10.	+	3,920.000
6398	" 27	" 28	*	Much	M. F.3	"	552.8	432.4	120.4	52.	26.8	25.2	B.	102.5	25.1	13.	12.1	14.8	2.64	8	1.84	6.44	2.36	4.08	.001	.08	5.	9.	33.	+	315,000
6441	Dec. 4	Dec. 5	*	"	M. F.6	"	461.6	401.	57.6	51.8	26.8	28.	G.	101.	23.7	12.4	11.3	16.	2.32	1.28	1.04	4.52	2.28	2.24	.004	.24	5.	5.	4.	+	4 520.000
6540	" 18	" 19	*	Cons'd	M. F.30	"	514.4	489.6	54.8	71.6	56.	15.6	G.	122.	32.4	17.6	14.8	16.8	3.2	1.84	1.36	6.6	3.08	3.52	.011	.4	5.	8.	3.	+	845.000
6578	" 25	" 27	*	Much	M. F.4	"	621.	541.6	82.4	101.6	15.2	56.4	......	160.	38.8	24.	14.8	20.	3.6	2.56	1.04	7.72	4.92	2.8	.007	.8	4.	6.5	—8.	?	1,990,000
....	....	....	..	....	....	......	......	.....	......	.....	....	....	......	.....	....	....	....	.....	.....	.....	....	.....	.....	.....	.....	....	....	....	......	....	....

TURBIDITY—*Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 2.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, LOCKPORT.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Turbidity.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis solv'd	Loss on Ig'n. Sus pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
5072	May 22	May 23	*	Much	M. F.3	None	633.2	558.	75.2	73.6	56.	17.6	B.	107.	48.	27.2	20.8	16.2	3.68	1.04	2.64	5.85	1.85	4.	.....	.25	....	....	....	....	....
5118	" 29	" 31	*	Cons'd	M. F.2	"	826.	688.	138.	71.8	60.	14.8	B.	187.5	38.5	18.6	19.9	27.2	3.84	1.056	2.784	6.33	2.09	4.24	.002	.28	18.3	....	24.4	....	....
5158	June 5	June 6	*	"	M. F.7	"	719.2	660.	89.2	69.2	48.8	20.4	B.	133.	43.3	20.	23.3	9.2	2.96	1.248	1.712	4.57	2.89	1.68	.002	.2	17.8	....	32.2	+	528,000
5204	" 12	" 14	*	"	M. F.5	"	633.2	508.1	121.8	82.8	48.4	34.4	B.	109.5	59.5	27.1	32.4	16.	2.96	1.184	1.776	5.96	2.2	3.76	.001	.32	....	....	27.7	+	5,540,000
5248	" 19	" 21	§	V.M'ch	V.M. F.6	"	675.6	574.8	100.8	84.8	71.	10.8	B.	125.	58.	23.5	34.5	20.8	2.88	1.36	1.52	5.08	2.52	2.56	.....	.32	....	24.	29.4	+	6,175,000
5291	" 26	" 27	*	Much	M. F.25	"	590.8	484.	106.8	55.2	30.4	24.8	B.	108.	47.	20.5	26.5	15.2	2.64	1.184	1.456	5.08	2.44	2.64	.....	.12	....	21.	26.5	+	3,300,000
5331	July 3	July 4	*	"	M. F.5	"	562.4	447.2	115.2	71.2	50.	21.2	B.	109.	41.4	21.7	19.7	14.6	2.8	.8	2.	5.56	2.68	2.88	.....	.2	....	25.	29.1	....	10,250,000
5387	" 10	" 11	*	Cons'd	M. F.6	"	534.	480.4	53.6	63.2	48.	15.2	B.	104.	34.5	15.9	18.6	12.8	2.24	.736	1.504	4.76	1.496	3.264	.001	.24	....	21.	27.	...	4,115,000
5434	" 17	" 18	*	"	M. F.9	"	582.8	511.2	71.6	55.2	44.8	10.4	B.	123.	22.6	16.4	6.2	6.72	1.024	.576	.448	2.04	1.272	.768	.45	.24	....	22.	29.	....	3,680,000
5483	" 24	" 25	*	Much	M. F.7	"	592.4	510.1	82.	101.6	70.	31.6	B.	102.	10.3	21.7	18.6	13.6	2.4	1.04	1.36	4.36	3.	1.36	.....	.8	....	24.	29.	....	3,250,000
5532	" 31	Aug. 1	§	Cons'd	M. F.5	"	525.2	451.6	73.6	96.4	78.8	17.6	B.	98.	41.	17.	24.	11.6	2.24	1.04	1.2	4.76	1.8	2.96	.005	.2	....	22.	29.	....	6,080,000
5577	Aug 7	" 8	§	V.M'ch	M. F.5	"	548.8	482.4	66.4	79.2	49.6	29.6	Gh.	130.5	43.2	22.8	20.4	20.	2.16	.96	1.2	4.44	2.04	2.4	.....	.2	....	21.	27.	+	2,800,000
5628	" 14	" 15	§	Much	M. F.5	"	532.8	468.4	64.4	92.	72.4	19.6	Gh.	118.	43.3	23.5	19.8	16.	2.16	.736	1.424	5.76	1.48	4.28	.....	.16	....	....	......		....
5676	" 21	" 22	*	"	M. F.6	"	504.	439.6	64.4	74.8	51.2	23.6	Gh.	106.	36.3	24.3	12.	15.2	2.56	1.472	1.088	5.24	3.32	1.92	.001	.28	....	22.5	31.	+	2,360,000
5731	" 28	" 29	*	Cons'd	M. F.5	"	553.6	484.	69.6	71.6	40.	31.6	Gh.	118.	35.4	25.2	10.2	18.	2.4	1.44	.96	4.12	3.	1.12	.....	.28	....	24.	29.	...	1,620,000
5790	Sept. 4	Sept. 5	*	Much	M. F.8	"	488.	423.6	64.4	52.8	30.4	22.4	Gh.	103.	32.2	17.8	14.4	15.	2.24	.608	1.632	4.76	1.944	2.816	.004	.16	....	23.	29.	+	1,010,000
5837	" 11	" 12	*	"	M. F.6	"	558.	490.4	67.6	81.6	63.6	18.	Gh.	129.5	36.9	18.8	18.1	17.6	2.32	.704	1.616	4.41	1.24	3.2	.....	.16	....	18.	26.		....
5882	" 18	" 19	*	"	M. F.5	"	501.6	441.2	60.4	70.4	44.4	26.	B.	110.	33.2	17.4	15.8	15.4	2.24	.72	1.52	4.28	2.44	1.84	.002	.2	....	20.	21.	....	660,000
5936	" 25	" 26	*	"	M. F.7	"	582.	506.4	75.6	63.2	40.	23.2	B.	139.	45.6	23.6	22.	18.	2.24	1.44	.8	4.26	2.5	1.76	.....	.24	....	15.5	20.	+	420,000
5984	Oct. 2	Oct. 3	*	"	M. F.5	"	526.	454.6	71.4	61.6	36.4	25.2	B.	114.	41.1	21.4	19.7	14.	2.4	1.44	.96	4.71	2.66	2.08	.....	.16	....	11.	25.	+	1,237,500
6079	" 16	" 17	*	"	M. F.2	"	480.4	415.2	65.2	52.8	20.4	32.4	B.	116.	23.5	11.8	11.7	14.8	2.16	.96	1.2	4.68	2.04	2.64	.....	.2	....	19.	21.	+	1,410,000
6146	" 23	" 24	*	"	M. F.7	"	189.2	131.2	58.	36.8	15.6	21.2	G.	118.	31.3	16.3	15.	11.8	2.8	.672	2.128	4.68	1.864	2.816	.....	.28	....	19.	23.	+	1,410,000
6196	" 30	" 31	*	"	M. F.7	"	532.8	468.	64.8	56.1	30.8	25.6	G.	116.5	26.3	12.3	14.	14.8	2.96	.8	2.16	5.48	1.1	1.08	.003	.4	....	12.	18.	+	1,110,000
6213	Nov. 6	Nov. 7	*	"	M. F.5	"	546.	498.4	47.6	45.6	23.2	22.4	B.	121.	34.7	14.8	19.9	11.8	2.8	1.28	1.52	5.48	2.12	3.36	.....	.28	....	12	18.	+	320,000
6279	" 13	" 14	‡	Cons'd	M. F.4	"	534.	476.4	57.6	59.2	28.4	30.8	B.	.....	28.9	8.9	20.	13.6	2.16	.512	1.648	4.56	1.32	3.24	.....	.08	....	10.	......	+	180,000
6338	" 20	" 21	*	Much	M. F.6	"	613.6	498.8	114.8	67.2	24.8	12.4	B.	125.	35.	12.	23.	16.	3.36	1.92	1.44	6.92	3.4	3.52	.....	.2	....	12.	18.	+	775,000
6400	" 27	" 28	*	"	M. F.3	"	529.6	460.8	68.8	55.2	22.	33.2	B.	123.	35.5	....	....	17.6	2.56	1.28	1.28	4.52	2.6	1.92	.001	.08	...	9.	18.	+	525,000
6446	Dec. 1	Dec. 6	‡	"	M. F.4	"	531.2	151.2	80.	64.4	37.6	26.8	G.	111.	27.3	18.7	8.6	15.2	2.4	1.44	.96	5.	2.344	2.656	.001	.16	....	9.	......	‡	695,000
6745	" 18	" 20	*	Cons'd	M. F.04	"	553.2	483.6	69.6	81.2	40.8	40.4	G.	111.5	27.3	11.6	12.7	14.4	1.32	2.08	2.24	6.76	3.16	3.6	.002	.16	...	9.	4.	?	490,000
6783	" 26	" 27	*	Much	M. F.6	"	633.6	562.4	71.6	69.2	44.	25.2	G.	167.5	36.6	23.	13.6	20.	1.	2.24	1.76	7.72	5.18	2.24	.005	.2	...	7.	7.	...	875,000

TURBIDITY * Decided. § Very Decided. † Distinct. ‡ Very Slight. | Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray Brown.

TABLE 3.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—DESPLAINES RIVER, LOCKPORT.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5071	May 22	May 23	†	Little	F.03	None	369.6	350.8	18.8	27.6	13.6	14.	B.	3.95	15.2	15.	.2	.016	.512	.448	.064	1.21	1.05	.16	.026	.24	....	....	.....	....	....
5119	" 29	" 31	*	"	M. F.3	"	375.6	353.6	22.	38.	36.	2.	B.	1.5	17.	14.	3.	.132	.72	.416	.304	1.21	.97	.24	.027	.4	18.4	....	24.4	....	....
5157	June 5	June 6	†	Cons'd	M. F.6	"	300.	264.4	35.6	36.	26.	10.	B.	2.5	16.7	14.5	2.2	.1	.48	.416	.064	1.29	.89	.4	.07	.48	17.9	....	32.2	—	7,500
5203	" 12	" 14	†	"	M. F.5	"	439.2	358.	81.2	67.2	36.8	30.4	B.	3.4	18.3	15.4	2.9	.144	.768	.701	.064	1.16	1.016	.144	.02	.44	18.7	....	27.7	—	15,300
5247	" 19	" 21	*	"	M. F.2	"	418.4	405.2	13.2	56.	52.8	3.2	B.	2.5	16.2	13.4	2.8	.144	.544	.448	.096	1.24	1.016	.224	.002	.36	1.	20.	28.3	—	3,700
5290	" 26	" 27	†	Little	F.2	"	319.6	280.	39.6	35.6	34.	1.6	B.	5.5	15.8	11.3	1.5	.06	.514	.48	.064	1.16	.952	.208	.001	.12	1.	24.	27.	—	33,150
5330	July 3	July 4	†	"	F.2	"	383.6	369.2	14.4	39.6	38.8	.8	B.	7.3	15.2	15.	.2	.08	.544	.496	.048	1.176	1.112	.061	.001	.16	....	25.	29.	....	6,100
5388	" 10	" 11	†	"	M. F.4	"	349.6	342.8	6.8	38.8	36.	2.8	B.	6.45	13.7	12.6	1.1	.04	.448	.4	.048	1.08	.76	.32	.008	.4	1.	24.	27.	....	1,350
5435	" 17	" 18	*	Cons'd	M. F.5	"	271.6	191.8	76.8	45.2	40.	5.2	B.	3.2	15.3	11.6	3.7	.128	.544	.32	.224	1.24	.824	.416	.03	.52	2.1	24.	29.	....	8,750
5482	" 24	" 25	†	"	M. F.4	"	309.6	284.4	25.2	49.2	48.4	.8	B.	4.1	15.	13.4	1.6	.068	.544	.416	.128	1.24	.92	.32	.012	.36	1.	26.	29.	....	28,450
5531	" 31	Aug. 1	†	Little	M. F.2	"	331.2	325.6	5.6	61.2	59.2	2.	Gh.	5.7	15.5	14.5	1.	.028	.512	.448	.064	.888	.782	.106	.011	.2	1.	23.	27.	....	10,200
5578	Aug. 7	" 8	†	"	M. F.4	"	338.	324.8	13.2	72.8	70.4	2.4	Gh.	6.8	14.3	13.4	.9	.02	.48	.416	.064	1.16	.856	.304	.002	.2	1.	23.	27.	+	9,800
5627	" 14	" 15	†	"	F.15	"	302.	297.2	4.8	78.4	73.2	5.2	Gh.	7.25	12.8	12.7	.1	.044	.48	.368	.112	1.16	.856	.304	.....	.2	....	....	......	....	....
5675	" 21	" 22		"	F.15	"	346.8	313.6	3.2	68.4	....	....	Gh.	10.4	13.7	13.1	.6	.032	.448	.416	.032	1.16	1.08	.08	.002	.16	1.2	24.	29.	+	15,400
5732	" 28	" 29	†	"	M. F.25	"	316.8	313.6	3.2	46.4	16.	.4	Gh	9.2	13.7	13.1	.6	.04	.512	.461	.048	.92	.84	.08	.003	.08	1.	25.	29.	....	120,000
5789	Sept. 4	Sept. 5	†	"	M. F.15	"	310.4	302.4	8.	50.	49.2	.8	B.	8.6	13.1	13.	.1	.092	.576	.416	.16	1.112	.824	.288	.005	.16	1	21.	29.	+	15,800
5836	" 11	" 12	‡	"	F.08	"	300.8	298.8	2.	67.6	66.	1.6	G.	8.55	12.6	12.6	0.0	.06	.512	.432	.08	1.16	.888	.272	.001	.12	....	20.	26.	+	21,000
5883	" 18	" 19	†	"	F.05	"	289.2	288.8	.4	46.	45.6	.4	B.	8.85	8.9	....	....	.062	.512	.432	.08	1.24	.924	.316	.003	.32	....	18.	21.	....	44,000
5937	" 25	" 26	†	"	M. F.04	"	304.	304.	0.0	27.2	26.8	.4	GB.	7.4	9.6	8.8	.8	.024	.404	.34	.064	.868	.74	.128	.001	.16	....	15.5	20.	?	12,200
5985	Oct. 2	Oct. 3	†	"	F.07	"	315.2	312.8	2.4	54.4	52.8	1.6	B.	7.7	10.	....	...	.054	.448	.416	.032	.82	.612	.208	.002	.12	...	14.	24.	....	....
6036	" 9	" 11	†	"	F.1	"	352.8	343.6	9.2	43.2	41.6	1.6	B.	7.9	9.3	9.1	.2	.032	.392	.332	.06	.772	.664	.108	.001	.2	1.	20.	21.	....	....
6078	" 16	" 17	†	"	M. F.10	"	360.4	351.6	8.8	35.6	34.8	.8	B.	9.6	13.1	12.5	.6	.232	.32	.288	.032	.904	.808	.096	.....	.16	1.	20.	24.	+	37,200
6145	" 23	" 24	|	"	M. F.15	"	355.2	351.2	4.	26.	18.	8.	G.	8.4	7.9	7.7	.2	.028	.352	.32	.032	.76	.52	.24	.....	.12	1.	20.	23.	+	20,500
6194	" 30	" 31	|	"	M. F.25	"	406.	397.2	8.8	24.8	22.	2.8	B.	8.5	8.1	7.7	.4	.024	.368	.32	.018	.648	.424	.224	.002	.08	1.4	14.	18.	+	19,700
6242	Nov. 6	Nov. 7	†	"	F.08	"	438.8	433.	5.8	36.	23.5	12.5	B.	12.3	8.1	7.2	.9	.104	.48	.256	.224	.904	.632	.272	.001	.24	1.	9.	20.	—	4,800
6280	" 13	" 14	‡	"	F.03	"	475.6	469.2	6.4	47.6	45.2	2.4	B.	15.1	7.1	7.1	0.0	.06	.512	.288	.224	1.	.584	.416	.006	.4	1.	8.	......	—	4,500
6337	" 20	" 21	|	"	F.03	"	438.4	428.4	10.	19.6	19.2	.4	G.	18.	6.7	6.6	.1	.032	.432	.32	.112	.744	.584	.16	.001	.28	....	11.	18.	+	9,300
6399	" 27	" 28	‡	"	F.02	"	450.4	446.8	3.6	32.8	31.6	1.2	B.	18.5	6.3	....	....	.028	.224	.192	.032	.616	.488	.128	.006	.48	....	8.	18.	+	9,900
6447	Dec. 4	Dec. 6	‡	"	F.02	"	444.	440.	4.	50.	48.4	1.6	G.	15.	5.3	5.3	0.0	.044	.208	.192	.016	.68	.552	.128	.001	.32	....	0.	......	—	4,960
6495	" 11	" 13	†	"	F.10	"	377.2	344.8	32.4	36.4	30.4	6.	G.	11.	7.8	4.9	2.9	.048	.32	.16	.16	.68	.424	.256	.003	.32	1.	9.	18.	+	....
6541	" 18	" 20	†	"	M. F.03	"	131.6	121.6	10.	40.	38.	2.	B.	13.75	8.2	8.2	0.0	.31	.368	.352	.016	.776	.68	.096	.003	1.04	....	8.	4.	+	20,950
6582	" 26	" 27	†	"	F.04	"	538.	514.	24.	65.2	56.4	8.8	B.	12.75	8.9	8.9	0.0	.152	.272	.256	.016	.776	.584	.192	.003	.72	1.	6.	0.	....	....

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 4.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—DESPLAINES RIVER, NORTH OF JACKSON ST., JOLIET.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5077	May 23	May 24	*	Cons'd	M. F.5	None	544.	500.4	43.6	55.6	34.8	20.8	B.	69.7	33.3	23.	10.3	8.8	2.4	.768	1.632	5.13	2.65	2.48	.012	.35	....	....	....	....	....
5109	" 29	" 30	§	"	M. F.3	"	560.4	460.8	99.6	52.8	25.6	27.2	B.	76.	30.5	18.6	11.9	10.8	2.56	.864	1.696	5.05	1.85	3.2	.001	.4	....	....	....	....	....
5153	June 5	June 6	+	"	M. F.5	"	464.8	399.2	65.6	44.4	38.	6.4	B.	50.	27.2	17.1	10.1	7.1	1.152	.608	.544	2.33	1.274	1.056	.09	.36	....	....	....	+	1.072.500
5202	" 12	" 13	*	"	M. F.6	Gas'y	640.	559.6	80.4	97.6	49.6	48	B.	97.5	37.1	19.8	17.3	12.8	2.64	1.28	1.36	5.08	1.48	3.6	.003	.2	....	....	....	+	2.465.000
5239	" 19	" 20	*	"	M. F.4	"	616.	587.6	58.4	57.2	49.2	8.	B.	120.	40.5	25.4	15.1	16.	2.72	.96	1.76	4.92	1.88	3.04	.004	.2	....	21.	24.	+	672.500
5284	" 26	" 27	*	"	M. F.5	"	552.8	467.6	85.2	52.8	34.4	18.4	B.	91.7	36.8	22.2	14.6	12.8	2.24	1.024	1.216	4.28	2.2	2.08	.001	.16	....	21.	24.	+	1.576.000
5327	July 3	July 4	*	"	M. F.2	"	546.4	483.2	63.2	76.	52	24.	B.	111.5	33.9	4.2	29.7	16.1	1.92	1.12	.8	4.92	2.76	2.16	....	.12	....	22.	24.	....	1,320,000
5380	" 10	" 11	..	....	M. F.5	"	587.2	537.6	49.6	80.	63.2	16.8	B.	110.5	21.7	15.	9.7	12.8	1.52	.88	61	4.28	1.88	2.4	.005	.24	....	21.5	19.	....	....
5431	" 17	" 18	*	Cons'd	M. F.15	"	505.2	400.	105.2	60.	50.	10.	B.	81.	23.1	15.7	7.4	6.4	1.12	.496	.624	2.52	1.016	1.504	.021	.44	....	21.	19.	....	1,700,000
5477	" 24	" 25	*	"	M. F.8	"	560.	521.6	38.4	87.6	78.8	8.8	B.	95.	25.1	17.2	7.9	11.4	1.44	.864	.576	3.64	1.56	2.08	.004	.2	....	25.	23.	....	5,525,000
5544	" 31	Aug. 3	*	"	M. F.25	"	508	439.6	68.4	85.6	54.8	30.8	B.	86.	26.2	13.4	12.8	10.8	1.44	.4	1.04	3.72	1.4	2.32	.015	.24	....	22.	15.	....	5,300,000
5572	Aug. 7	" 8	*	"	M. F.05	"	625.6	468	157.6	91.2	66.8	24.4	B.	106.	33.8	20.2	13.6	20.	1.84	.56	1.28	4.12	.984	3.136	.003	.24	....	21.	10.5	+	4.300.000
5629	" 14	" 15	*	Much	M. F.5	"	549.2	435.2	114.	91.6	54.	37.6	Gh.	105.	29.	15.7	13.3	26.4	1.6	.544	1.056	3.4	1.432	1.968	.005	.2	....	22.	15.	....	....
5669	" 21	" 22	*	Cons'd	M. F.3	"	502.4	450.	52.4	54.8	48.	6.8	Gh.	104.	26.6	18.2	8.4	16.8	1.6	.64	.96	3.16	1.72	1.44	.002	.2	....	24.	16.	+	2.550.000
5727	" 28	" 29	§	V. M'ch	V.M. F.25	"	527.2	468.	59.2	30.	23.6	6.4	B.	109.	29.5	16.8	12.7	19.2	1.92	.704	1.216	4.28	1.4	2.88	.022	.12	....	22.	18.	....	7,300,000
5787	Sept. 4	Sept. 5	*	Much	M. F.25	"	517.6	475.2	42.4	47.6	30.	17.6	B.	111.2	28.1	20.7	7.4	19.6	1.04	.864	.176	3.72	1.88	1.84	.005	.16	....	20.	15.	....	350,000
5829	" 11	" 12	*	"	M. F.4	"	492.8	450.4	42.4	37.2	35.6	1.6	B.	110.5	24.6	15.1	9.5	17.6	1.84	.448	1.392	3.16	1.08	2.08	.002	.24	....	11.	17.	+	216,000
5933	" 25	" 26	*	Cons'd	M. F.06	"	542.8	448.5	94.3	42.8	9.6	33.2	B.	121.	26.8	16.5	10.3	18.4	2.	.608	1.392	3.7	1.54	2.16	.002	.2	....	15.	9.	+	85,000
6024	Oct. 2	Oct. 7	*	Much	M. F.25	"	583.6	532.	51.6	34.8	18.4	16.4	B.	129.	31.8	16.9	14.9	18.	2.24	.64	1.6	3.7	1.06	2.64	.003	.08	....	14.	9.	....	....
6076	" 16	" 17	*	"	M. F.4	"	444.8	400.4	44.4	39.6	26.8	12.8	B.	92.5	23.1	14.6	8.8	12.8	2.	.928	1.072	3.56	2.04	1.52	.015	.2	....	20.	16.	+	710,000
6139	" 23	" 24	*	"	M. F.5	"	505.2	463.2	42.	28.	22.8	5.2	B.	111.5	17.9	11.2	6.7	14.8	2.24	1.2	1.04	4.68	1.64	3.04	.006	.2	....	13.	17.	+	1,550,000
6189	" 30	" 31	*	Cons'd	M. F.3	"	524.	470.4	53.6	44.	24.8	19.2	G.	123.5	24.1	13.9	10.2	15.2	2.4	.64	1.76	4.52	1.32	3.2	.005	.16	...	0.	2.	....	680,000
6236	Nov. 6	Nov. 7	*	"	M. F.6	"	606.	558.4	47.6	53.6	37.6	16.	G.	138.5	27.6	17.9	9.7	17.6	3.2	1.04	2.16	4.68	2.04	2.64	.01	.32	...	-1.	-6.	+	830,000
6271	" 13	" 14	*	"	M. F.5	"	......	496.8	...	...	21.4	..	......	116.	27.8	18.6	9.2	14.8	2.24	.704	1.536	5.	2.28	2.72	.008	.12	...	6.	3.	+	1,280,000
6331	" 20	" 21	§	V. M'ch	M. F.1	"	828.4	582.	216.4	84.4	28.	56.4	B.	144.	35.	12.1	22.9	18.	3.2	.832	2.368	6.14	1.72	4.72	.004	.2	....	8.	0.	+	1,980,000
6397	" 27	" 28	*	Much	M. F.25	"	641.6	498.4	143.2	65.6	32.8	32.8	B.	111	25	11.4	13.6	14.	2.8	.704	2.096	6.12	1.16	4.96	.004	.08	....	0	-8.	+	345,000
6442	Dec. 4	Dec. 5	*	"	M. F.25	"	622.4	492	130.4	64.	48.	16.	G.	106	23.5	10.6	12.9	15.2	2.24	.704	1.536	4.36	1.16	3.2	.004	.32	...	2	10.	+	1,185,000
6497	" 11	" 13	*	"	M. F.50	"	587.2	430.	157.2	58.	32.4	25.6	G.	98.5	15.6	11.1	4.5	12.	2.96	.96	2	5.32	1.88	3.44	.001	.12	...	4.5	11.	+	2,210,000
6542	" 18	" 19	*	Cons'd	M. F.25	"	647.6	540.4	107.2	78.8	54.8	24.	B.	123.5	28.5	14.9	13.6	16.8	1.32	1.2	3.12	8.52	1.96	6.56	.01	.2	...	9.	10.	+	340,000
6579	" 26	" 27	*	Much	M. F.2	"	632.	515.2	116.8	69.6	24.8	44.8	B.	121.	39.7	19.4	20.3	14.	3.01	1.76	1.28	6.76	3.72	3.04	.027	.28	...	10.	15.	+	370,000

TURBIDITY—*Decided. §Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. V.M., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 5.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—DESPLAINES RIVER, SOUTH OF TOWN, JOLIET.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5076	May 23	May 24	*	Cons'd	M. F.4	None	648.	509.2	138.8	59.2	31.6	27.6	B.	71.	37.	17.8	19.2	8.	2.64	.72	1.92	5.53	2.49	3.04	.006	.3	....	....	......	....	....
5108	" 29	" 30	§	"	M. F.2	"	596.	373.2	222.8	51.6	30.	21.6	B.	76.	32.9	16.6	16.3	10.8	2.56	.832	1.728	5.69	1.61	4.08	.009	.36	....	....	......	....	....
5152	June 5	June 6	+	"	M. F.5	"	454.4	388.8	65.6	41.2	32.8	8.4	B.	50.2	23.2	17.5	5.7	7.2	1.12	.56	.56	2.09	1.4	.69	.07	.2	....	....	......	+	1,137,500
5201	" 12	" 13	*	"	M. F.5	Gas'y	657.6	546.4	111.2	96.8	38.6	58.2	B.	98.	35.	19.	16.	13.6	2.08	.96	1.12	3.96	1.88	2.08	.004	.2	....	....	......	+	1,715,000
5240	" 19	" 20	*	"	M. F.4	"	678.8	582.	96.8	57.6	31.	23.6	B.	120.	40.	23.	17.	17.6	2.64	.72	1.92	5.72	1.368	4.352	.002	.45	....	22.	......	+	1,330,000
5285	" 26	" 27	*	"	M. F.4	"	554.	464.8	89.2	58.8	40.8	18.	B.	89.	35.1	19.3	15.8	12.	2.32	.704	1.616	4.44	1.4	3.04	.001	.24	....	21.	25.	+	1,295,000
5228	July 3	July 4	*	"	M. F.2	"	549.2	487.2	62.	72.4	50.4	22.	B.	107.5	30.7	5.1	25.6	14.8	2.	.72	1.28	4.6	1.8	2.8	.001	.24	....	22.5	24.	....	1,955,000
5379	" 10	" 11	*	"	M. F.5	"	577.6	130.5	447.1	78.4	67.6	10.8	B.	104.	25.3	15.4	9.9	13.2	1.68	.672	1.008	4.28	1.336	2.944	.004	.24	....	21.	19.	....	....
5430	" 17	" 18	*	"	M. F.2	"	579.2	412.	167.2	52.8	44.8	8.	B.	84.	25.9	15.7	10.2	7.4	1.28	.512	.768	2.76	1.048	1.712	.03	.48	....	22.	19.	....	1,560,000
5478	" 24	" 25	*	"	M. F.5	"	615.6	503.6	112.	79.6	51.	25.6	B.	93.	28.1	16.4	11.7	12.	1.84	.736	1.104	4.28	1.16	3.12	.001	.24	....	25.	23.	....	6,090,000
5545	" 31	Aug. 3	*	"	M. F.3	"	631.2	442.8	188.4	109.2	62.8	46.4	B.	85.5	35.5	14.4	21.1	11.2	2.08	.48	1.6	4.6	1.24	3.36	.006	.28	....	22.	18.	....	6,800,000
5573	Aug. 7	" 8	*	Much	M. F.06	"	719.6	505.6	214.	28.8	24.4	4.4	Gh.	134.7	39.	17.	22.	16.	2.56	.64	1.92	5.56	1.144	4.416	.002	.32	....	20.	18.	?	6,300,000
5630	" 14	" 15	*	"	M. F.25	"	550.8	512.4	38.4	82.8	60.8	22.	Gh.	113.	27.9	17.5	10.4	14.	1.36	.48	.88	3.	1.176	1.824	.004	.2	....	22.	17.	....	....
5670	" 21	" 22	§	V. M'ch	M. F.15	"	686.8	497.6	189.2	73.6	43.2	30.4	Gh.	114.	35.	18.2	16.8	13.8	2.24	.512	1.728	5.08	1.08	4.	.002	.2	....	23.	18.	+	3,266,660
5728	" 28	" 29	§	"	VM. F.06	"	617.6	512.8	134.8	83.6	39.6	44.	B.	116.	32.7	14.4	18.3	16.	2.16	.512	1.648	4.76	.84	3.92	.002	.08	....	23.	18.	....	2,080,000
5786	Sept. 4	Sept. 6	*	Much	M. F.08	"	590.8	510.8	80.	42.4	25.6	16.8	B.	130.	26.7	14.7	12.	11.9	1.12	.352	.768	4.28	.92	3.36	.01	.2	....	22.	17.	....	1,750,000
5830	" 11	" 12	*	"	M. F.35	"	490.8	442.4	48.4	52.	42.8	9.2	B.	110.5	24.2	14.	10.2	18.	1.68	.448	1.232	3.32	1.08	2.24	.002	.2	....	17.	12.	+	220,000

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 6

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—KANKAKEE RIVER, WILMINGTON

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n.: Tot'l	Loss on Ig'n.: Dissolv'd	Loss on Ig'n.: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5156	June 5	June 6	+	Cons'd	M. F.5	None	326.8	264.4	62.4	30.4	29.6	.8	B.	3.7	17.1	13.	4.1	.072	.56	.364	.196	1.29	.92	.37	.026	1.32	3.	....	......	—	46,900
5200	" 12	" 13	+	"	M. F.5	"	346.4	289.6	56.8	46.8	42.8	4.	B.	2.	19.5	17.5	2.	.128	.684	.608	.076	1.18	1.176	.304	.009	.76	2.3	....	21.	—	22,700
5255	" 19	" 21	+	"	M. F.4	"	317.2	299.6	17.6	24.8	22.8	2.	B.	2.	19.5	16.6	2.9	.06	.544	.148	.096	1.32	1.024	.296	.005	.18	1.5	20.	8.	....	4,000
5292	" 26	" 27	+	"	M. F.3	"	350.8	298.4	52.4	24.8	12.8	12.	B.	2.	18.9	16.3	2.6	.042	.48	.368	.112	1.24	.952	.288	.001	.12	1.	24.	21.	—	17,700
5382	July 10	July 11	*	"	M. F.15	"	292.4	260.4	32.	42.4	32.4	10.	B.	3.9	10.2	7.5	2.7	.044	.384	.24	.144	.92	.6	.32	.01	.52	1.	23.	18.	....	810
5424	" 17	" 18	+	"	M. F.05	"	364.4	332.8	31.6	67.2	60.	7.2	Gh.	3.2	11.8	10.2	1.6	.076	.352	.256	.096	1.016	.824	.192	.06	3.6	1.6	22.	18.	....	12,400
5479	" 24	" 25	+	Little	M. F.15	"	298.8	263.2	35.6	39.6	35.2	4.4	Gh.	3.65	11.4	9.2	2.2	.016	.48	.256	.224	.84	.....	.....	.008	.32	1.3	27.	26.	....	950
5530	" 31	Aug. 1	*	Cons'd	M. F.05	"	316.4	250.	66.4	51.6	50.8	.8	Gh.	3.4	14.2	11.	3.2	.068	.448	.228	.22	.84	.6	.24	.012	.24	1.3	24	16.	....	2,550
5571	Aug. 7	" 8	*	"	M. F.03	"	372.4	245.6	126.8	100.4	54	16.1	Gh.	3.2	15.	10.5	4.5	.048	.18	.24	.24	1.16	.504	.656	.001	.24	1.	22.	18.	+	2,100
5626	" 11	" 15	+	"	M. F.1	"	303.6	230.8	72.8	52.	16.1	5.6	Gh.	4.1	11.	9.4	4.6	.052	.448	.208	.24	.984	.536	.448	.006	.16	1.	22.	17.	....	....
5673	" 21	" 22	+	"	M. F.15	"	297.6	237.2	60.1	30.8	....	....	Gh.	3.9	11.8	9.	2.8	.044	.352	.272	.08	.984	.552	.132	.002	.08	1.	22.	22.	....	4,550
5729	" 28	" 29	*	"	M. F.06	"	312.8	239.2	73.6	23.6	17.2	6.4	Gh.	3.9	11.5	9.2	2.3	.06	.48	.256	.221	1.	.536	.164	.007	.2	.1	25.	20.	....	6,800
5788	Sept. 4	Sept. 5	*	"	M. F.04	"	303.6	211.2	62.4	28.	22.8	5.2	B.	4.55	11.1	9.1	2.	.092	.448	.256	.192	.888	.6	.288	.008	.2	.1	23.	17.	+	6,050
5832	" 11	" 12	*	"	M. F.15	"	278.	238.4	39.6	36.8	21.8	12.	B.	5.3	11.3	7.8	3.5	.08	.32	.224	.096	.92	.796	.124	.013	.2	.1	19.	16.	+	2,850
5879	" 18	" 19	*	"	M. F.08	"	286.1	226.1	60.	43.2	32.4	10.8	B.	4.75	9.8	6.2	3.6	.044	.416	.272	.144	.84	.618	.192	.007	.2	.1	20.	16.	—	9,300
5932	" 25	" 26	+	"	M. F.04	"	263.2	231.	29.2	22.4	21.6	.8	B.	5.4	8.9	7.	1.9	.036	.272	.24	.032	.801	.548	.256	.004	.16	.1	11.	16.	‡	2,750
5981	Oct. 2	Oct. 3	+	Little	M. F.07	"	240.8	232.8	8.	28.4	26.8	1.6	B.	4.8	8.3	6.9	1.1	.012	.256	.208	.018	.58	.104	.176	.004	.16	.8	8.	10.	+	5,750
6029	" 9	" 10	+	"	M. F.03	"	265.6	253.6	12.	22.	....	....	B.	4.9	7.	6.7	.3	.012	.256	.21	.016	.532	.392	.11	.005	.12	.1	13.	7.	+	2,200
6077	" 16	" 17	+	"	M. F.03	"	288.4	249.2	39.2	26.	23.2	2.8	B.	4.9	7.3	6.8	.5	.028	.176	.096	.08	.68	.36	.32	.005	.21	0.1	19.	19.	+	3,850
6142	" 23	" 24	+	Cons'd	M. F.01	"	......	211.2	......	.....	11.4	....	G.	4.7	5.8	1.9	.9	.016	.21	.16	.08	.456	.36	.096	.004	.08	0.1	14.	18.	+	32,500
6188	" 30	" 31	+	Little	M. F.04	"	255.2	229.2	26.	31.2	30.	1.2	G.	4.7	5.3	4.7	.6	.02	.176	.128	.018	.312	.2	.112	.005	.16	0.1	10.	17.	+	4,450
6237	Nov. 6	Nov. 7	+	"	F.01	"	276.	273.6	2.4	16.	15.8	.2	G.	4.8	6.5	5.6	.9	.02	.21	.208	.032	.552	.121	.128	.002	.32	1.2	5.	1.	+	1,100
6269	" 13	" 14	+	"	F.04	"	......	.....	......	.....	.....	....	......	4.	7.7	7.7	0.0	.012	.288	.256	.032	.76	.712	.018	.03	2.4	1.6	5.	7.	+	4,100
6332	" 20	" 21	+	Cons'd	M. F.1	"	317.6	300.8	16.8	36.	33.6	2.1	B.	3.55	8.1	8.	.1	.036	.288	.256	.032	.808	.616	.192	.02	3.6	1.8	8.	5.	+	3,800
6396	" 27	" 29	+	"	M. F.2	"	310.4	297.6	12.8	25.2	21.2	4.	G.	3.6	9.5	9.2	.3	.054	.32	.288	.032	1.	.84	.16	.024	2.1	1.6	5.	0.	+	41,800
6443	Dec. 4	Dec. 5	+	Little	F.15	"	296.4	289.2	7.2	39.2	38.4	.8	G.	3.6	8.8	8.8	0	.036	.336	.301	.032	.776	.68	.096	.007	1.68	1.8	1.	1.	+	33,800
6493	" 11	" 12		"	F.07	"	280.8	279.2	1.6	41.2	41.2	.0	B.	3.7	9.3	9.1	.2	.028	.132	.361	.068	.776	.68	.096	.005	1.18	1.8	6.	6.	+	7,800
6541	" 18	" 19	*	Cons'd	M. F.20	"	313.2	280.	33.2	50.	15.2	1.8	G.	3.1	11.6	9.7	1.9	.06	.352	.221	.128	1.	.84	.16	.018	6.	0.	2.	0.	+	39,000
6580	" 26	" 27	+	"	M. F.15	"	297.2	272	25.2	41.6	36.8	4.8	B.	3.5	10.7	9.7	1.	.068	.288	.21	.018	.936	.68	.256	.013	1.	1.8	5.	5.	+	20,600

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray Brown.

TABLE 7.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, MORRIS, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of		Appearance.			Odor.	Residue on Evaporation.						Color on Ignition.	Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
	1899 Collection.	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dissolv'd	Loss on Ig'n. Susp'd			Total.	By Dissolved.	By Suspd Matter.	Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Susp'd	Total.	Dissolved.	Suspended.	Nitrites.	Nitrates.					
5112	May 29	May 30	†	Cons'd	M. F.4	None	445.2	419.2	26.	63.2	54.	9.2	B.	44.2	19.2	15.	4.2	8.8	.88	.544	.336	1.93	1.18	.75	.035	.44	7.3	21.	17.	....	....
5164	June 6	June 7	*	"	M. F.25	"	402.8	324.8	78.	55.2	52.	3.2	B.	32.	15.4	11.4	4.	3.6	.8	.544	.256	2.17	1.23	.94	.06	.64	8.9	25.	25.	?	455,000
5209	" 13	" 14	*	"	M. F.5	"	427.2	420.4	6.8	39.6	34.4	5.2	B.	43.5	19.1	15.2	3.9	5.6	.736	.624	.112	1.72	1.24	.48	.06	.44	6.	26.	22.	+	1,397,000
5245	" 19	" 20	..	....	....	"	......	......	......	......	......	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	5.3	24.	......	?	717,500
5299	" 27	" 28	†	Cons'd	M. F.25	"	372.4	355.6	16.8	27.2	24.4	2.8	B.	48.	17.6	15.2	2.4	6.8	.672	.512	.16	1.4	.92	.48	.028	.24	5.2	24.	20.	+	1,430,000
5332	July 3	July 4	†	"	F.2	"	403.2	395.6	7.6	33.6	22.8	10.8	B.	57.5	15.3	13.5	1.8	7.52	.672	.448	.224	1.72	1.144	.576	.011	.2	5.2	26.	21.	....	2,070,000
5393	" 11	" 12	†	"	M.	"	451.6	445.2	6.4	47.6	40.4	7.2	B.	71.	15.8	14.1	1.7	8.8	.768	.528	.24	1.88	1.08	.8	.03	.2	5.3	24.	19.	....	441,000
5428	" 17	" 18	*	"	M. F.06	Gas'y	373.2	312.8	60.4	49.6	46.	3.6	B.	37.	15.5	11.6	3.9	5.6	.8	.336	.461	1.8	.824	.976	.08	1.08	7.5	24.	18.	....	112,000
5484	" 25	" 26	†	Little	M. F.25	None	432.	422.4	9.6	55.6	52.8	2.8	Gh.	58.	14.	12.3	1.7	7.04	.768	.48	.288	2.68	1.48	1.2	.035	.24	6.3	27.	22.	....	1,000,000
5529	" 31	Aug. 1	*	Cons'd	M. F.04	"	421.2	401.2	20.	64.4	54.	10.4	W.	63.	17.3	14.2	3.1	7.68	.736	.448	.288	1.64	1.16	.48	.018	.2	6.	21.	13.	....	1,239,500
5570	Aug. 7	" 8	†	Little	M. F.04	"	425.2	420.4	4.8	46.8	43.2	3.6	Gh.	70.2	16.3	11.9	4.4	12.	.72	.48	.24	1.96	.996	.964	.002	.24	6.3	23.	14.	+	5,850,000
5624	" 14	" 15	†	"	M. F.07	"	391.	.....	......	54.	....	....	Gh.	79.	16.3	13.3	3.	11.	.864	.448	.416	1.752	1.048	.704	.005	.28	5.8	21.	14.	....	....
5672	" 21	" 22	†	"	M. F.15	"	398.4	395.6	2.8	39.6	38.	1.6	Gh.	75.	15.5	13.	2.5	12.	.832	.48	.352	1.56	1.08	.48	.005	.12	5.1	25.	19.	....	5,890,000
5738	" 29	" 30	*	Cons'd	M. F.08	"	446.4	440.4	6.	96.8	69.2	27.6	Gh.	92.	14.7	12.7	2.	14.	.88	.464	.416	2.12	1.144	.976	.017	.16	4.1	26.	17.	....	6,550,000
5785	Sept. 4	Sept. 5	*	"	M. F.1	"	434.4	433.2	1.2	44.4	42.	2.4	B.	93.	14.8	13.9	.9	10.4	.64	.448	.192	2.04	1.144	.896	.005	.08	4.1	25.	14.	....	4,890,000
5812	" 12	" 13	†	"	M. F.1	"	444.	361.2	82.8	40.	39.2	.8	G.	98.	17.5	14.3	3.2	12.8	1.344	.528	.816	2.64	1.144	1.496	.004	.08	5.3	20.	16.	+	1,285,000
5930	" 25	" 26	†	"	M. F.05	"	453.6	444.4	9.2	35.2	17.6	17.6	B.	97.5	18.8	11.8	7.	13.2	1.28	.576	.704	2.18	1.06	1.12	.008	.08	5.6	17.	10.	+	383,300
5982	Oct. 2	Oct. 3	*	"	M. F.2	"	448.4	444.4	4.	36.	31.2	4.8	GB.	100.	17.2	11.1	6.1	13.6	.96	.608	.352	1.94	1.06	.88	.015	.24	5.4	10.	12.	+	380,000
6074	" 16	" 17	*	"	M. F.03	"	331.8	328.8	6.	20.8	18.	2.8	B.	62.5	10.7	9.1	1.6	8.	.512	.384	.128	1.124	.836	.288	.012	.4	5.6	20.	19.	+	115,000
6143	" 23	" 24	†	"	M. F.2	"	390.4	372.	18.4	21.2	18.	3.2	G.	75.	11.7	8.6	3.1	10.8	1.184	.608	.576	1.8	.776	1.024	.002	.28	5.6	15.	16.	+	1,020,000
6190	" 30	" 31	†	Little	M. F.15	"	383.6	370.	13.6	24.4	16.	8.4	G.	73.4	11.9	10.9	1.	10.	1.152	.416	.736	1.96	.648	1.312	.004	.08	5.1	10.	—2.	+	2,080,000
6235	Nov. 6	Nov. 7	†	Cons'd	M. F.2	"	389.2	382.	7.2	22.8	22.	.8	G.	65.	12.3	10.5	1.8	8.	1.184	.544	.64	2.04	1.064	.976	.014	.32	6.	16.	—4.	+	910,000
6294	" 14	" 15	†	"	M. F.06	"	404.8	398.4	6.4	43.2	40.	3.2	B.	51.	11.5	8.6	2.9	6.4	1.04	.832	.208	1.96	1.56	.4	.044	1.81	6.3	8.	7.	+	385,000
6329	" 20	" 21	†	"	M. F.13	"	384.4	372.4	12.	35.6	30.	5.6	G.	50.5	11.3	9.7	1.6	6.8	.864	.544	.32	1.64	1.	.61	.08	1.72	6.3	9.	1.	+	245,000
6395	" 27	" 28	†	"	M. F.3	M'sty	401.6	397.6	4.	33.6	28.4	5.2	G.	56.5	12.3	11.8	.5	6.4	1.184	.704	.48	1.96	1.44	.52	.05	1.04	6.3	6.	—4.	+	115,000
6590	Dec. 26	Dec. 27	*	"	M. F.3	None	401.6	389.2	12.4	48.	46.	2.	G.	49.5	12.3	11.9	.4	5.6	1.312	.96	3.52	2.28	1.64	.64	.035	2.8	....	14.	—8.	+	170,000

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 8.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—FOX RIVER, OTTAWA, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Dis-solved.	Sus-pended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Igni-tion.	Chlorine.	Oxygen Consumed. Total.	By Dis-solved.	By Suspd Matter.	Nitrogen as Ammonia. Free Am-monia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Dis-solved.	Sus-pended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac per Cubic Centi meter.
5113	May 29	May 30	§	V. M'ch	M. F.06	None	1060.4	244.	816.4	65.6	30.4	35.2	B.	.3	35.5	9.8	25.7	.12	1.92	.32	1.6	5.53	.73	4.8	.05	1.68	6.	....	24.	....	......
5163	June 5	June 7	*	Cons'd	M. F.2	"	459.6	306.4	153.2	44.4	40.8	3.6	B.	1.	15.	9.5	5.5	.128	.64	.304	.336	1.61	.826	.784	.08	.92	4.	29.	21.	—	28,500
5207	" 12	" 14	+	Little	M. F.1	"	335.2	306.	29.2	24.	24.	0.0	B.	2.	10.5	9.3	1.2	.048	.448	.32	.128	1.16	.952	.208	.015	.72	3.	26.	29.	—	1,450
5241	" 19	" 20	+	"	F.1	"	321.6	306	15.6	36.	35.2	.8	B.	2.5	9.5	9.3	.2	.048	.352	.272	.08	.68	.536	.144	.001	.2	4.	28.	33.	—	12,700
5294	" 26	" 27	+	"	M F.05	"	320.4	311.6	8.8	39.2	30.8	8.4	B.	4.	9.4	9.3	.1	.04	.256	.24	.016	.84	.536	.304	.....	.08	3.	27.	32.	—	1,460
5325	July 3	July 4	+	"	F.05	"	309.2	305.2	4.	37.6	32.4	5.2	B.	5.	7.7	7.4	.3	.04	.312	.212	.1	1.	.652	.318	.002	.16	3.	28.	35.	....	900
5385	" 10	" 11	+	"	F.1	"	297.2	184.8	112.4	54.8	54.4	.4	B.	6.2	9.	8.6	.4	.048	.32	.24	.08	.84	.504	.336	.....	.24	3.	28.	33.	....	8,750
5433	" 17	" 18	*	Cons'd	M. F.3	"	420.	282.4	137.6	62.	39.2	22.8	B.	4.5	16.8	10.2	6.6	.092	.896	.368	.528	1.8	.792	1.008	.045	1.28	5.	26.	32.	....	4,355
5480	" 24	" 25		Little	M. F.25	"	238.4	220.	18.4	56.4	49.6	6.8	Gh.	4.1	11.4	10.3	1.1	.016	.512	.288	.224	1.16	.632	.528	.005	.2	3.	28.	35.	....	675
5535	" 31	Aug. 2		"	F.15	"	282.4	278.8	3.6	130.8	64.8	66.	Gh.	5.2	10.3	10.3	0.0	.044	.352	.32	.032	.76	.664	.096	.001	.2	3.	25.	32.	...	990
5580	Aug. 7	" 8	+	"	M. F.05	"	296.4	272.4	24.	64.8	61.6	3.2	Gh.	5.3	11.5	10.2	1.3	.012	.448	.288	.16	.92	.536	.384	.....	.16	4.	27.	33.	-	1,010
5632	" 14	" 15		Cons'd	F.05	"	293.6	282.8	10.8	76.	66.	10.	Gh.	4.8	9.5	8.8	.7	.08	.352	.288	.064	.76	.6	.16	.....	.2	3.6	26.	29.	—	2,700
5678	" 21	" 22		Little	F.1	"	285.2	280.8	4.4	58.	58.	0.0	Gh.	5.8	10.4	9.8	.6	.036	.448	.416	.032	.76	.68	.08	.....	.16	1.	28.	33.	?	1,240
5733	" 28	" 29	+	"	M F.04	"	304.	290.4	13.6	55.2	54.8	.4	Gh.	6.	19.9	19.4	.5	.036	.384	.272	.112	.76	.6	.16	.....	.04	3.	31.	37.	+	15,000
5797	Sept 4	Sept. 6	*	"	M F.03	"	311.2	306.8	4.4	50.8	49.2	1.6	B.	6.7	8.9	7.1	1.8	.04	.336	.288	.048	.824	.376	.448	.001	.2	3.6	26.	31.	-	10,400
5828	" 11	" 12		"	F.08	"	279.2	270.	9.2	45.6	38.8	6.8	G.	6.4	8.8	8.8	0.0	.02	.32	.288	.032	.728	.536	.192	.....	.12	4.	25.	26.	—	3,430
5880	" 18	" 19		"	F.02	"	291.6	277.6	14.	62	60.8	1.2	B.	6.15	7.9	6.1	1.8	.024	.352	.256	.096	.76	.6	.16	.....	.08	4.	21.	24.	+	1,000
5929	" 25	" 26	+	"	M. F.04	"	298.8	297.2	1.6	46.	44.	2.	B.	7.2	8.2	7.	1.2	.02	.368	.276	.092	.704	.532	.172	.....	.16	1.	18.5	22.	—	1,460
5996	Oct. 2	Oct. 4	+	"	M F.05	"	308.8	296.8	12.	68.8	57.2	11.6	G.	7.7	8.9	7.6	1.3	.046	.304	.192	.112	.548	.42	.128	.....	.28	4.	16.	24.	‡	2,500
6023	" 9	" 10	+	"	F.04	"	309.2	308.	1.2	38.	38.	....	B.	7.4	7.1	7.	.1	.02	.264	.256	.008	.644	.596	.048	.001	.12	4.	17.5	25.	+	8,000
6083	" 16	" 18	+	"	F.02	"	326.	318.8	7.2	52.4	51.2	1.2	B.	8.	7.	6.9	.1	.128	.416	.336	.08	.618	.488	.16	.001	.24	4	17.	26.	+	7,000
6152	" 23	" 25		"	F.05	"	318.	308.8	9.2	37.6	33.2	4.4	G.	7.7	6.6	6.6	0.0	.032	.288	.256	.032	.44	.36	.08	.....	.44	4.6	17.5	31.	—	4,100
6199	" 30	Nov. 1		"	F.04	"	320.	299.6	20.4	14.	....	....	G.	7.6	6.2	6.2	0.0	.024	.288	.256	.032	.456	.408	.048	.008	.28	4.	13.	23.	—	6,550
6240	Nov. 6	" 7	+	"	F.03	"	315.2	300.8	14.4	46.	41.6	4.4	B.	7.2	5.9	5.8	.1	.032	.304	.272	.032	.584	.52	.064	.002	.24	4.	9.	21.		3,250
6378	" 13	" 14		"	F.03	"	337.6	328.8	8.8	38.8	32.4	6.4	B.	7.	4.6	4.5	.1	.012	.352	.208	.144	.488	.296	.192	.....	.08	3.6	9.5	10.	+	2,300
6336	" 20	" 21		"	F.02	"	315.6	312.	3.6	36.	34.8	1.2	G.	7.7	5.5	5.3	.2	.024	.304	.256	.048	.616	.552	.064	.003	.24	3.6	13	11.		4,350
6402	" 27	" 28		"	F.02	"	312.4	309.6	2.8	57.2	56.4	.8	B.	8.	5.	....	....	.02	.224	.16	.064	.456	.36	.096	.012	.4	3.6	7.	8.	—	13,000
6505	Dec. 11	Dec. 14		"	M F.02	"	330.4	326.4	4.	60.4	58.4	2	B.	7.6	6.2	6.2	.0	.16	.272	.256	.016	.616	.488	.128	.01	.56	4	11	11.	—	8,700
6574	" 21	" 23	+	"	F.02	"	328.4	324.8	3.6	40.4	40.	.4	......	7.6	6.9	6.8	.1	.168	.224	.224	.0	.6	.18	.12	.01	.72	4	2.	3.	—	10,800
6594	" 28	" 29	+	"	F.02	"	420.8	118.	2.8	88.	86.8	1.2	G.	9.	7.1	6.7	.4	.12	.224	.176	.048	.52	.424	.096	.004	.8	3.6	0.	0.	+	1,500

TURBIDITY—*Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG. Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown

TABLE 9.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER, T. J. BURRILL, University of Illinois.

SOURCE OF WATER—ILLINOIS RIVER, OTTAWA, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dissolv'd	Loss on Ig'n. Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5242	June 19	June 20	†	Little	F.3	None	392.8	383.2	9.6	61.6	53.4	8.2	B.	30.	15.9	15.8	.1	1.36	.544	.512	.032	1.24	.984	.256	.5	1.28	4.6	26.	33.	—	12,800
5295	" 26	" 27	†	"	M. F.3	"	402.8	400.4	2.4	24.	23.6	.4	B.	47.	15.5	14.9	.6	3.28	.512	.496	.016	1.24	1.176	.064	.6	.6	4.	26.	32.	—	28,300
5334	July 3	July 4	†	"	F.15	"	392.	374.4	17.6	43.6	26.8	16.8	B.	45.	14.5	13.	1.5	3.28	.516	.432	.084	1.16	1.016	.144	.575	1.4	3.5	27.	35.	....	12,045
5386	" 10	" 11	†	"	F.2	"	406.	394.4	11.6	46.8	46.8	0.	B.	65.25	14.2	12.9	1.3	5.12	.48	.4	.08	1.24	.98	.26	.75	1.84	4.	27.	33.	....	12,300
5432	" 17	" 18	*	Cons'd	M. F.06	Gas'y	394.4	340.4	54.	39.6	39.2	.4	G.	47.	12.6	9.9	2.7	3.76	.384	.304	.08	1.24	.792	.448	.5	.44	6.	25.	32.	....	....
5481	" 24	" 25	†	"	M. F.2	None	408.	374.8	33.2	59.2	54.	5.2	G.	36.25	13.4	12.	1.4	.96	.48	.364	.116	1.24	.952	.288	.55	1.72	4.	29.	35.	....	3,550
5531	" 31	Aug. 2	*	"	M. F.2	"	419.2	396.4	22.8	64.4	64.4	0.0	G.	45.	14.3	12.7	1.6	4.48	.592	.432	.16	1.1	.824	.576	.7	2.6	4.	26.	32.	....	4,800
5579	Aug. 7	" 8	†	Little	M. F.05	"	376.8	369.6	7.2	72.8	55.6	17.2	G.	54.	12.5	11.5	1.	4.	.512	.304	.208	1.16	.856	.304	.875	2.6	3.	28.	33.	....	9,850
5631	" 14	" 15	‖	Cons'd	F.1	"	380.4	374.	6.4	60.	....	....	G.	60.5	11.7	10.8	.9	4.24	.416	.32	.096	.856	.696	.16	.55	1.32	3.	24.	29.	....	....
5677	" 21	" 22	‖	Little	F.08	"	393.2	392.8	.4	51.2	49.2	2.	G.	69.	11.9	11.7	.2	3.08	.448	.416	.032	.76	.68	.08	.95	2.6	3.	27.	33.	....	11,600
5731	" 28	" 29	*	Cons'd	M. F.15	"	432.8	411.2	21.6	47.6	42.8	4.8	G.	75.5	14.3	12.3	2.	3.04	.688	.416	.272	1.56	.744	.816	1.25	2.8	4.	30.	37.	....	3,800
5798	Sept. 4	Sept. 6	‖	Little	F.06	"	438.	436.	2.	51.2	49.6	1.6	B.	88.	11.2	10.9	.3	4.8	.364	.352	.012	.856	.824	.032	1.125	3.	3.	25.	30.		37,400
5839	" 11	" 12	‖	"	F.07	"	436.4	426.	10.4	36.4	29.6	6.8	G.	93.	11.8	11.5	.3	6.08	.48	.368	.112	1.112	.696	.416	.9	2.24	3.6	21.	27.	+	60,000
5881	" 18	" 19	‖	"	F.04	"	428.4	414.	14.4	33.6	30.	3.6	B.	90.75	11.4	8.4	3.	7.68	.496	.288	.208	1.16	.824	.336	.375	1.48	3.6	20.5	24.	—	21,000
5938	" 25	" 26	†	"	M. F.06	"	402.4	389.2	13.2	30.4	24.4	6.	GB.	82.5	10.2	8.4	1.8	6.4	.512	.448	.064	1.06	.836	.224	.375	2.4	3.	18.	22.	+	42,000
5995	Oct. 3	Oct. 4	†	Cons'd	M. F.2	"	444.	440.	4.	43.6	40.4	3.2	G.	97.	11.9	11.7	.2	7.54	.464	.432	.032	.9	.836	.064	.4	3.	3.	15.	21.	+	56,000
6032	" 9	" 10	†	Little	F.15	"	438.8	429.2	9.6	37.6	29.2	8.4	B.	85.	9.5	9.5	0.0	8.8	.544	.512	.032	1.06	.964	.096	.4	1.48	3.	16.	25.	—	4,200
6084	" 16	" 18	‡	"	F.04	"	366.8	319.6	47.2	57.6	44.8	6.8	B.	70.	9.4	9.3	.1	8.8	.4	.368	.032	1.	.52	.48	.175	.68	3.	18.	26.	+	48,000
6153	" 23	" 25	‖	"	F.1	"	372.	356.4	15.6	20.	19.6	.4	G.	69.5	8.4	8.1	.3	6.08	.384	.352	.032	.92	.68	.24	.625	2.2	3.	18.	26.	+	21,000
6198	" 30	Nov. 1	‖	"	F.1	"	370.8	319.2	21.6	19.6	....	....	G.	61.5	7.	7.	0.0	8.	.384	.32	.064	.744	.648	.096	.225	.88	3.6	13.5	23.	—	26,600
6241	Nov. 6	" 7	†	"	F.05	"	390.	369.6	20.4	36.	18.	18.	B.	65.	7.7	7.1	.6	7.52	.512	.432	.08	1.064	.712	.352	.15	.64	3.	8.	21.	+	28,000
6277	" 13	" 14	‖	"	F.06	"	364.4	358.	6.4	34.8	28.	6.8	B.	30.	6.9	6.8	.1	4.8	.448	.352	.096	.68	.488	.192	.225	.56	3.	9.	10.	—	3,000
6335	" 20	" 21	‖	"	F.04	"	368.4	360.	8.4	31.6	18.	13.6	G.	45.5	7.8	7.5	.3	4.8	.528	.4	.128	1.196	.936	.26	.25	2.2	3.	13.	11.	+	8,000
6401	" 27	" 28	‖	"	F.03	"	381.6	373.6	8.	27.6	23.2	4.4	B.	47.	3.3	....	....	5.28	.432	.416	.016	.936	.84	.096	.27	2.	3.	7.	8.	+	24,750
6504	Dec. 11	Dec. 14	†	"	M. F.03	"	371.2	365.6	5.6	35.6	34.4	1.2	B.	44.5	11.2	10.9	.3	5.6	.608	.512	.096	1.48	.968	.512	.013	1.2	3.	11.	11.	+	356,000
6575	" 21	" 23	†	Cons'd	M. F.05	"	361.	332.4	28.6	27.2	23.6	3.6	G.	36.	15.5	9.9	5.6	3.68	.8	.528	.272	1.48	.84	.64	.055	3.	3.6	2.	3.	+	217,300
6595	" 28	" 29	*	"	M. F.04	"	339.6	327.2	12.4	24.8	23.2	1.6	G.	24.5	11.9	10.7	1.2	2.4	.528	.304	.224	1.256	.936	.32	.05	4.	3.	0.	0.	?	212,000

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 10.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—BIG VERMILLION RIVER, LA SALLE, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Dissolved.	Suspended.	Loss on Ign'n: Tot'l.	Loss on Ign'n: Dis-solv'd	Loss on Ign'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	By Dissolved.	By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Dis-solved.	Sus-pended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5079	May 24	May 25	+	Little	M. F.02	None	494.8	168.	26.8	67.2	56.4	10.8	B.	11.	5.9	5.1	.8	.096	.114	.112	.032	.65	.41	.24	.003	2 2	....	....	......	....	....
5115	" 30	" 31	+	Cons'd	M. F.02	"	525.6	457.2	68.4	69.2	53.2	16.	B.	15.3	5.2	3.7	1.5	.104	.224	.16	.064	.49	.374	.116	.017	1.48	....	....	......	....	....
5159	June 6	June 7	*	"	M. F.1	"	398.	316.8	81.2	18.	16.	2.	B.	7.5	10.2	7.1	3.1	.096	.32	.176	.144	.73	.57	.16	.046	.8	....	....	......	—	7,650
5218	" 15	" 16	*	"	M. F.1	"	521.6	475.6	46.	39.2	33.6	5.6	B.	38.	7.	4.8	2.2	.052	.224	.16	.061	.92	.568	.352	.01	1.76	....	....	......		3,100
5219	" 20	" 21	*	"	M. F.05	"	104.1	356.8	47.6	84.4	64.	20.4	B.	12.	6.2	4 6	1.6	.08	.32	.176	.144	.68	.248	.432	.022	2.28	....	....	......	+	2,600
5296	" 27	" 28	+	Little	M F.02	"	561.6	510.8	20.8	62 8	54.4	8.4	B.	26.	4.5	3.9	.6	.168	.144	.112	.032	.76	.312	.448	.014	1.28	....	....	......	—	14,900
5340	July 4	July 5	+	"	F.02	"	701.6	673.6	28.	57.2	43.2	14.	B.	37.2	7.8	5.1	2.7	.064	.248	.144	.104	.68	.376	.304	.015	.88	9.1	....	......	...	1,450
5391	" 11	" 11	+	"	F.15	"	318.	294.8	23 2	51.2	48.8	2.4	B.	8.9	7.1	6.2	1.2	.04	.208	.176	.032	.72	.664	.056	.035	.64	9.11	....	......	....	730
5440	" 18	" 19	*	Cons'd	M. F.06	"	122.8	409.2	13.6	64.4	64.4	0.0	B.	18.	11.3	9.9	1.4	.512	.416	.288	.128	1.08	.696	.384	.175	.8	11.6	....	......	....	11,350
5489	" 25	" 26		Little	M. F.08	"	494.8	470.	24.8	48.8	40.8	8.	B.	21.8	4.8	4.2	.6	.12	.256	.192	.064	.6	.44	.16	.045	1.32	9.11	....	......	....	....
5537	Aug. 1	Aug. 2	*	Cons'd	M F.04	"	721 8	707.6	17.2	112.8	112.	.8	B.	10.	6.9	6.5	.4	.088	.256	.176	.08	.68	.408	.272	.007	.32	9 5	....	......	–	560
5586	" 8	" 9	+	"	M. F.03	"	919.6	913.2	6.4	89.2	41.1	44.8	Gh.	53.	6.7	6.1	.6	.112	.272	.16	.112	.52	.408	.112	.014	.4	9.3	....	......	?	1,805
5638	" 15	" 16	+	"	M F.04	"	612 1	562.	50.4	92.	80.4	11.6	Gh.	31.	8.1	6.2	1.9	.124	.224	.192	.032	.844	.44	.404	.012	.36	9.1	....	......	....	....
5687	" 22	" 23	*	Much	M F.07	"	634.4	554.4	80.	69.6	45.2	24.4	Blk.	39.	9.8	6.2	3.6	.114	.504	.176	.328	.76	.408	.352	.03	.2	9.3	....	......		1,055
5735	" 29	" 30	*	Cons'd	M. F.02	"	789.6	736.	53.6	78.4	78.	.4	Gh.	53 5	9.	5.1	3.9	.256	.288	.176	.112	.92	.504	.416	.017	.08	...	....	......	....	2,500
5793	Sept. 5	Sept. 6	*	"	M. F.03	"	1054.	1000.8	53.2	107.6	106.8	.8	B.	66.7	8.7	4.	4.7	.352	.32	.192	.128	.824	.6	.224	.03	.21	9.2	....	......	...	3,210
5846	" 12	" 13	+	"	M. F.03	"	1132.4	1084.	18 4	91.6	88.8	2.8	B	80.9	9.	3.6	5.4	.12	.416	.176	.24	664	.392	.272	.003	.16	....	....	......	...	1,890
5891	" 19	" 20	+	Little	M. F.02	"	1215.6	1182.	33.6	85.6	82.8	2 8	B.	84.5	7.6	4.4	3.2	.061	.32	.118	.172	.81	.44	.4	.008	.16	....	....	......	+	1,950
5940	" 26	" 27	*	Cons'd	M F.01	"	1774.	1750.	24.	133.6	118.4	15.2	B.	136.2	8	4 5	3.5	128	.24	.12	.12	.516	.388	.128	.01	.4	....	....	......	–	2,360
5999	Oct. 3	Oct. 4	+	"	M F.03	"	1638 8	1602.8	36.	150.8	130.8	20.	GB.	132.5	6.6	5 9	.7	.128	.24	.144	.096	74	.34	.4	.008	.28	9.5	....	......		3,000
6040	" 10	" 11	*	"	M. F.03	"	1826.8	1806.8	20.	119.2	116.	3.2	G.	122.5	5.4	4.8	.6	.112	.21	.16	.08	.42	.276	.144	.008	.2	....	....	......		3,000
6082	" 17	" 18	+	Little	M. F.01	"	1621.6	1575 6	16.	77.2	72.4	4.8	B.	128 5	6.8	6.7	.1	.192	.272	.208	.061	.632	.36	.272	.012	.56	9.7	....	......	-	6,350
6148	" 24	" 25	+	Cons'd	M. F.04	"	1596.	1575.2	20.8	78.4	76.8	1.6	G.	112.5	6.9	4.5	2.1	.128	.224	.156	.068	.52	.168	.352	.008	.36	....	....	......	-	3,600
6200	" 31	Nov. 1	+	"	M. F.03	"	1696.	1682.8	13.2	132.	124.4	7.6	G.	116.	4.3	3.6	.7	.16	.256	.208	.018	.392	.248	.144	.008	.4	....	....	......	-	15,700
6246	Nov. 7	" 8	+	Little	F.03	"	1704.8	1702.8	2.	128.	119.2	8.8	B.	123.	3.4	3	.1	.48	.144	.12	.024	.36	.328	.032	.008	.6	....	....	......	—	6,900
6297	" 14	" 15	+	"	M. F.02	"	1858.8	1850.	8.8	154.	150.4	3.6	B.	134.	3	2.8	.2	.8	.112	.096	.016	.328	.....	.....	.008	.28	....	....	......		5,850
6342	" 21	" 22		"	F.03	"	1318.4	1329.2	19.2	112.4	104.	8.4	B.	86.	3.8	3.7	.1	.56	.208	.16	.018	.552	.488	.064	.021	1.	....	....	......		24,200
6406	" 28	" 29	+	"	M. F.03	"	1615.6	1601.2	14.4	165.6	164.	1 6	B.	105.5	2	2.	0.0	.528	.096	.08	.016	.124	.36	.064	.028	.84	....	....	......		17,600
6464	Dec. 5	Dec. 7	+	"	M. F.01	"	1639.2	1616.4	22.8	113.2	143.2	0.0	B.	110	2.1	2 4	.0	.72	.112	.096	.016	.392	.296	.096	.02	.88	....	....	......	-	11,200
6509	" 12	" 14	+	"	M. F.06	"	1149.2	1416.8	2.4	171.8	172.8	2.	G.	84.5	1.9	1 9	0.0	.96	.128	.112	.016	.581	.424	.16	.01	.68	....	....	......	....	18,000
6546	" 19	" 20	+	"	F.02	"	611 6	608.4	3.2	39.6	39.6	0 0	G.	30.	5.6	5.	.6	.18	.272	.221	.018	.552	.328	.224	.008	.4	....	....	......	–	4,600
6589	" 26	" 28	+	"	M. F.02	"	433.2	419.6	13.6	30.	21.4	5.6	G.	13 5	5 6	5.6	0.0	.16	.176	.12	.056	.68	.328	.352	.036	4.8	....	....	......	–	17,350

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 11.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, LA SALLE, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Dissolved.	Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	By Dis-solved.	By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen: Total.	Dis-solved.	Sus-pended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5081	May 24	May 25	*	Cons'd	M. F.03	None	468.	402.	66.	51.6	32.4	19.2	B.	12.25	12.	9.1	2.9	2.	.48	.32	.16	1.29	1.122	.168	.035	1.2	....	....	....	....	....
5117	" 30	" 31	*	"	M. F.05	"	432.	396.8	35.2	55.2	52.	3.2	B.	14.	12.	10.	2.	72	.32	.224	.096	1.29	1.05	.24	.064	.72	....	....	....	....	....
5161	June 6	June 7	†	"	M. F.2	"	419.2	362.4	56.8	38.8	32.8	6.	B.	13.4	14.3	9.4	4.9	.088	.8	.381	.416	1.53	1.02	.51	.06	.6	....	....	....	?	4.200
5220	" 15	" 16	*	Much	M. F.15	"	364.4	322.	42.4	41.2	31.2	10.	B.	22.	12.7	9.3	3.4	.64	.576	.288	.288	1.48	.984	.496	.04	.48	....	....	....	+	3.500
5251	" 20	" 21	*	Cons'd	M. F.15	"	384.	333.6	50.4	45.2	45.2	0.0	B.	11.5	14.	9.	5.	.8	.608	.368	.24	1.4	.824	.576	.03	.36	....	....	....	+	152,500
5298	" 27	" 28	†	Little	M. F.4	"	337.2	308.8	28.4	26.	24.8	1.2	B.	12.	11.9	11.7	.2	.88	.48	.4	.08	1.24	.984	.256	.027	.24	....	....	....	+	520.000
5338	July 4	July 5	*	Cons'd	M. F.1	"	267.2	207.2	60.	41.6	10.	31.6	B.	15.	14.4	11.2	3.2	.72	.72	.448	.272	1.4	1.048	.352	.027	.12	9.1	....	....	....	371.000
5389	" 11	" 11	†	"	M. F.15	"	358.4	321.2	37.2	59.2	54.4	4.8	B.	13.	13.4	10.4	3.	.32	.608	.336	.272	1.4	.76	.64	.02	.36	9.1	....	....	....	79.000
5441	" 18	" 19	*	"	M. F.04	"	384.8	331.2	53.6	56.	50.	6.	Gh.	11.	7.5	6.1	1.4	.096	.224	.144	.08	.68	.504	.176	.05	3.	11.6	....	....	....	20.300
5488	" 25	" 26	‖	Little	M. F.1	"	320.	313.6	6.4	54.4	47.6	6.8	Gh.	16.	8.8	7.5	1.3	.56	.368	.304	.064	.92	.792	.128	.05	.28	9.11	....	....	....	....
5539	Aug. 1	Aug. 2	*	Cons'd	M. F.15	"	306.8	280.	26.8	66.4	61.2	5.2	Gh.	14.5	12.1	9.8	2.3	.736	.448	.304	144	1.16	.728	.432	.055	.32	9.5	....	....	+	170.000
5584	" 8	" 9	†	"	M. F.04	"	286.8	248.4	38.4	45.6	26.	19.6	Gh.	13.	11.2	10.4	.8	.592	.448	.272	.176	1.08	.824	.256	.15	.36	9.3	....	....	+	497,000
5636	" 15	" 16	†	"	M. F.15	"	320.	286.	34.	66.8	64.	2.8	Gh.	13.	11.6	9.7	1.9	.88	.432	.352	.08	1.112	.952	.16	.026	.28	9.1	....	....	....	....
5685	" 22	" 23	*	"	M. F.1	"	335.6	291.6	44.	56.8	54.8	2.	Gh.	12.5	12.1	9.9	2.2	.544	.496	.368	.128	1.08	.888	.192	.024	.12	9.3	....	....	+	77.000
5737	" 29	" 30	*	"	M. F.03	"	318.4	310.8	7.6	39.2	39.2	0.0	Gh.	13.5	9.5	7.9	1.6	.64	.432	.304	.128	1.16	.984	.176	.013	.2	9.3	....	....	....	220.000
5791	Sept. 5	Sept. 6	*	"	M. F.03	"	338.4	303.2	35.2	42.4	41.2	1.2	Gh.	14.5	11.5	7.3	4.2	.72	.352	.32	.032	1.24	.888	.352	.035	.24	9.2	....	....	+	95.500
5844	" 12	" 13	†	"	M. F.05	"	357.6	318.8	38.8	55.2	54.4	.8	B.	17.	12.2	10.6	1.6	.512	.48	.288	.192	1.336	.856	.48	.03	.28	9.3	....	....	+	172.500
5892	" 19	" 20	†	"	M. F.03	"	390.	349.2	40.8	59.6	58.4	1.2	B.	19.	12.1	8.9	3.2	.64	.448	.368	.08	1.24	.856	.384	.075	1.08	9.5	....	....	....	354,000
5912	" 26	" 27	*	"	M. F.04	"	364.	308.4	55.6	64.	57.6	6.4	GB.	22.	12.5	7.7	4.8	.56	.544	.32	.224	1.348	.752	.596	.05	.36	9.4	....	....	+	43,500
5998	Oct. 3	Oct. 4	†	"	M. F.05	"	333.2	301.6	31.6	73.6	58.	15.6	GB.	20.	12.9	9.6	3.3	.416	.512	.384	.128	1.3	.836	.464	.035	.36	9.4	....	....	+	188.000
6038	" 10	" 11	*	"	M. F.04	"	363.2	319.4	43.8	37.2	36.6	.6	B.	15.	9.5	9.4	.1	.4	.496	.384	.112	1.22	.74	.48	.012	.08	9.5	....	....	+	80.000
6081	" 17	" 18	†	Little	M. F.2	"	360.4	323.2	37.2	58.	48.8	9.2	B.	17.	8.9	7.2	1.7	.592	.432	.32	.112	1.192	.504	.688	.02	.24	9.7	....	....	+	143.000
6150	" 24	" 25	†	Cons'd	M. F.04	"	386.	328.8	57.2	30.8	18.8	12.	G.	18.	8.2	7.2	1.	.464	.448	.352	.096	.84	.584	.256	.022	.44	9.7	....	....	+	114.000
6202	" 31	Nov. 1	†	"	M. F.04	"	389.2	363.6	25.6	44.	42.4	1.6	G.	17.5	8.7	7.	1.7	.496	.496	.256	.24	.968	.68	.288	.035	.44	9.9	....	....	+	376.000
6245	Nov. 7	" 8	†	Little	F.04	"	374.4	339.6	34.8	38.	34.4	3.6	B.	15.	7.1	6.1	1.	.432	.432	.272	.16	1.096	.76	.336	.032	.36	9.9	....	....	+	80.000
6298	" 14	" 15	†	"	M. F.03	"	352.4	341.2	11.2	37.2	34.	3.2	B.	14.	7.8	6.2	1.6	.144	.72	.288	.432	1.48	.744	.736	.004	.2	10.3	....	....	?	77.000
6341	" 21	" 22	†	Cons'd	M. F.03	"	350.4	329.2	21.2	52.4	46.	6.4	B.	14.	8.	6.6	1.4	.192	.544	.32	.224	1.48	.744	.736	.016	.28	10.4	....	....	+	65.000
6401	" 28	" 29	†	Little	M. F.03	"	351.6	338.	13.6	73.2	71.2	2.	B.	14.	7.1	6.5	.6	.336	.416	.256	.16	1.16	.744	.416	.025	.24	10.2	....	....	+	224.000
6466	Dec. 5	Dec. 7	†	"	M. F.02	"	357.6	356.8	.8	61.6	58.4	3.2	B.	16.	7.7	5.6	2.1	.224	.512	.24	.272	1.096	.744	.352	.012	.36	10.2	....	....	+	168.000
6507	" 12	" 14	*	Cons'd	M. F.03	"	540.8	440.8	100.	71.6	56.	15.6	B.	29.5	15.5	8.1	7.4	.96	.64	.288	.352	1.88	.64	1.24	.05	1.4	10.9	....	....	+	462.000
6547	" 19	" 20	†	"	M. F.20	"	377.2	369.2	8.	33.6	31.2	2.4	G.	32.25	10.	9.2	.8	3.52	.576	.512	.064	1.448	.808	.64	.08	1.68	11.2	....	....	+	138.500
6587	" 26	" 28	‖	Little	M. F.03	"	474.8	470.8	4.	62.8	62.4	.4	G.	41.25	13.4	9.9	3.5	3.2	.496	.352	.144	1.288	1.128	.16	.175	3.12	11.1	....	....	+	123.500

TURBIDITY—*Decided. §Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish, Blk., Black. GB., Gray-Brown.

TABLE 12.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—ILLINOIS RIVER, LA SALLE, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Dissolved.	Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	By Dissolved.	By Suspd Matter.	Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Alb. Am. Dis-solv'd	Alb. Am. Sus-pnd'd	Organic Nitrogen. Total.	Dissolved.	Suspended.	Nitrogen as Nitrites.	Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5006	May 5	May 6	+	Cons'd	M. F.06	None	414.4	358.4	56.	45.2	44.	1.2	B.	22.	14.2	13.9	.3	1.76	.56	.512	.048	1.29	1.17	.12	.25	1.28	....	....	....	....	....
5080	" 24	" 25	+	Little	M. F.01	"	389.2	364.	25.2	29.6	24.8	4.8	B.	16.	14.5	12.8	1.7	.8	.48	.352	.128	1.21	.945	.265	.06	1.6	....	....	....	....	....
5116	" 30	" 31	§	Much	M. F.2	"	507.6	292.8	214.8	83.2	59.2	24.	B.	11.5	22.1	12.1	10.	.8	.656	.32	.336	1.85	.826	1.024	.2	1.24	....	....	....	....	....
5160	June 6	June 7	+	Cons'd	M. F.3	"	351.	308.8	45.2	36.	35.2	.8	B.	9.	15.9	12.6	3.3	.36	.48	.384	.096	1.29	.826	.164	.32	1.32	....	....	....	—	45,500
5219	" 15	" 16	*	Much	M. F.3	"	420.4	350.4	70.	40.8	37.6	3.2	B.	47.5	19.2	14.9	4.3	1.28	.608	.352	.256	1.56	1.144	.416	.4	1.22	....	....	....	—	4,900
5250	" 20	" 21	*	Cons'd	M. F.3	"	462.	374.4	87.6	72.	52.	20.	B.	27.	14.8	12.9	1.9	.88	.704	.384	.32	1.32	.856	.464	.35	1.84	....	....	....	—	8,400
5297	" 27	" 28	+	Little	M. F.4	"	451.2	402.	49.2	34.8	27.6	7.2	B.	43.5	16.3	14.1	2.2	1.92	.576	.422	.154	1.64	1.16	.48	.56	1.76	....	....	....	—	12,400
5329	July 4	July 5	*	Cons'd	M. F.15	"	412.8	376.4	36.4	52.	49.2	2.8	B.	42.	17.	12.9	4.1	1.04	.544	.432	.112	1.56	.92	.64	.55	2.4	9.1	....	....	....	7,150
5390	" 11	" 12	+	Little	M. F.25	"	412.4	374.	38.4	53.6	46.8	6.8	B.	66.	14.	12.3	1.7	2.8	.512	.368	.144	1.16	.984	.176	1.1	2.8	9.1	....	....	....	1,530
5442	" 18	" 19	*	Cons'd	M. F.15	"	350.	292.4	57.6	49.6	43.2	6.4	G.	30.	13.6	10.5	3.4	2.48	.608	.272	.336	1.4	.728	.672	.38	1.8	11.6	....	....	....	12,100
5487	" 25	" 26	+	"	M. F.15	"	411.6	344.	67.6	60.8	57.6	3.2	G.	31.5	13.1	9.8	3.3	.24	.576	.32	.256	1.32	.792	.528	.28	1.76	9.1	....	....	....	4,700
5538	Aug. 1	Aug. 2	*	"	M. F.25	"	432.4	377.6	54.8	85.2	78.	7.2	G.	47.	16.	12.	4.	1.28	.544	.352	.192	1.32	.888	.432	.7	2.4	9.5	....	....	+	17,300
5585	" 8	" 9	+	"	M. F.07	"	407.6	374.4	33.2	60.4	53.2	7.2	G.	47.5	13.7	11.5	2.2	.896	.528	.304	.224	1.32	.76	.56	.7	2.8	9.3	....	....	—	9,900
5637	" 15	" 16	+	"	M. F.15	"	406.4	385.6	20.8	64.	61.2	2.8	G.	57.5	13.3	11.4	1.9	1.6	.496	.352	.144	1.208	.664	.544	.6	2.8	9.4	....	....	....	....
5686	" 22	" 23	*	"	M. F.15	"	420.4	381.6	38.8	51.2	43.6	7.6	G.	61.	13.7	10.8	2.9	1.2	.576	.384	.192	1.24	.888	.352	.31	3.2	9.3	....	....	—	11,600
5736	" 29	" 30	*	"	M. F.08	"	418.4	397.2	21.2	57.6	43.6	14.	G.	66.	12.3	9.	3.3	.288	.528	.32	.208	1.32	.92	.4	.75	2.6	9.3	....	....	....	4,800
5792	Sept. 5	Sept. 6	*	"	M. F.06	"	492.	426.	66.	32.8	28.	4.8	B.	75.5	13.3	7.9	5.4	2.8	.544	.48	.064	1.464	.856	.608	1.	3.5	9.2	....	....	....	5,000
5845	" 12	" 13	+	"	M. F.06	"	426.4	393.2	33.2	40.	36.	4.	B.	69.25	12.2	11.1	1.1	4.	.416	.32	.096	1.08	.312	.768	.5	2.4	9.3	....	....	—	7,050
5893	" 19	" 20	+	Little	M. F.03	"	424.4	392.	32.4	33.2	33.2	....	G.	73.	11.	7.9	3.1	1.1	.448	.368	.08	1.16	.392	.768	.325	2.4	....	....	....	+	14,350
5911	" 26	" 27	*	Cons'd	M. F.04	"	402.	388.8	13.2	28.	24.8	3.2	GB.	73.	10.1	8.	2.1	.576	.448	.336	.112	.868	.74	.128	.3	1.88	9.4	....	....	+	12,400
5997	Oct. 3	Oct. 4	+	"	M. F.15	"	437.2	421.6	15.6	86.4	49.2	37.2	GB.	84.5	12.	10.8	1.2	5.92	.448	.416	.032	1.11	.801	.336	.175	1.72	9.4	....	....	+	37,000
6039	" 10	" 11	*	"	M. F.08	"	432.	424.8	7.2	26.4	25.2	1.2	B.	76.	9.7	9.4	.3	6.08	.464	.416	.048	1.06	.9	.16	.225	1.44	9.5	....	....	—	28,000
6080	" 17	" 18	+	Little	M. F.03	"	400.4	378.4	22.	33.2	29.2	4.	B.	68.	11.6	9.3	2.3	5.92	.416	.384	.032	1.032	.704	.328	.375	1.88	9.7	....	....	—	14,050
6119	" 24	" 25	+	Cons'd	M. F.1	"	395.6	353.6	42.	33.2	22.4	10.8	G.	60.	10.4	7.8	2.6	4.64	.464	.368	.096	.92	.584	.336	.3	2.	9.7	....	....	—	29,400
6204	" 31	Nov. 1	‡	"	M. F.12	"	387.6	367.2	20.4	38.4	30.4	8.	G.	53.5	7.7	7.7	0.0	4.32	.4	.288	.112	.84	.612	.228	.275	1.44	9.9	....	....	—	10,900
6214	Nov. 7	" 8	+	Little	F.04	"	403.6	399.2	4.4	32.8	19.6	13.2	B.	54.	7.1	7.1	.3	5.12	.512	.272	.24	1.032	.68	.352	.15	1.16	9.9	....	....	—	8,950
6296	" 14	" 15	†	"	M. F.03	"	351.2	341.6	9.6	21.	21.	0.0	B.	33.	7.2	7.	.2	3.04	.32	.288	.032	.76	.584	.176	1.5	1.12	10.3	....	....	+	15,100
6340	" 21	" 22	†	Cons'd	M. F.04	"	348.4	345.2	3.2	36.	34.	2	B.	36.5	7.5	7.2	.3	2.72	.32	.288	.032	1.196	.68	.516	.325	3.	10.	....	....	+	10,100
6405	" 28	" 29	†	Little	M. F.04	"	402.8	389.2	13.6	50.8	49.2	1.6	B.	38.	7.9	7.6	.3	3.84	.368	.32	.048	.936	.744	.192	.24	.54	10.2	....	....	+	14,200
6465	Dec. 5	Dec. 6	†	Cons'd	M. F.1	"	380.	362.8	17.2	48.4	36.8	11.6	B.	12.5	9.4	....	....	4.32	.416	.32	.096	1.065	.776	.289	.14	2.08	10.2	....	....	+	55,000
6508	" 12	" 14	†	"	M. F.06	"	403.6	373.6	30.	15.6	13.2	2.4	G.	42.5	10.	9.5	.5	4.32	.56	.448	.112	1.128	.904	.224	.15	1.1	10.9	....	....	....	76,600
6545	" 19	" 20	†	"	M. F.30	"	368.	353.2	14.8	37.2	29.2	8.	B.	31.5	12.3	10.7	1.6	3.84	.648	.528	.12	1.48	1.064	.416	.065	2.8	11.2	....	....	+	84,000
6588	" 26	" 28	*	"	M. F.06	"	358.	326.	32.	48.4	18.1	0.0	G.	21.	13.9	9.8	1.1	1.92	.432	.32	.112	1.	.872	.128	.065	1.	11.1	....	....	+	190,000

TURBIDITY * Decided. § Very Decided. + Distinct. ‡ Very Slight. † Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 13.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—ILLINOIS RIVER, HENRY, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dissolv'd	Loss on Ig'n. Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5121	May 30	May 31	*	Little	M. F.05	None	465.2	378.	87.2	87.2	84.	3.2	B.	17.	16.	12.	4.	.896	.576	.352	.224	1.53	.97	.56	.14	1.08	8.7	....	24.	....	....
5165	June 6	June 7	*	Cons'd	M. F.15	"	399.2	315.6	83.6	56.	34.4	21.6	B.	12.5	16.1	12.7	3.4	.576	.512	.4	.112	1.53	.986	.544	.32	1.28	8.4	29.	28.	?	8,850
5205	" 12	" 14	*	"	M. F.3	"	376.	316.	60.	39.2	29.6	9.6	B.	17.5	14.4	10.6	3.8	.64	.608	.384	.224	1.72	1.24	.48	.4	1.52	8.2	29.	29.	....	159,000
5256	" 20	" 21	*	Much	M. F.1	"	468.	294.4	173.6	23.6	20.	3.6	B.	18.	24.1	12.6	11.5	.32	1.344	.448	.896	3.16	1.048	2.112	.08	.32	9.7	30.	30.	....	48,750
5300	" 27	" 28	†	Cons'd	M. F.15	"	436.	404.4	31.6	32.8	31.2	1.6	B.	41.5	16.8	13.9	2.9	1.2	.672	.48	.192	1.56	1.08	.48	.62	2.2	6.3	28.	31.	....	40,800
5348	July 5	July 6	*	"	M. F.03	"	386.8	342.	44.8	44.4	....	....	B.	35.5	16.6	13.2	3.4	.64	.864	.48	.384	1.96	1.176	.784	.34	1.28	7.5	29.	29.	—	15,500
5404	" 12	" 13	*	"	M. F.08	"	429.6	402.8	26.8	48.8	47.2	1.6	B.	51.5	13.4	11.8	4.6	1.390	.416	.368	.048	1.304	1.16	.144	.400	1.28	7.5	30.	32.	—	31,000
5143	" 18	" 19	*	"	M. F.3	"	343.2	255.2	88.	45.2	43.6	1.6	Gh.	25.	13.6	10.2	3.4	1.024	.48	.24	.24	1.08	.696	.384	.25	1.44	9.	28.	27.	+	7,550
5496	" 26	" 27	*	"	M. F.15	"	347.2	326.	21.2	51.6	44.4	7.2	Gh.	28.5	12.6	12.	.6	.384	.448	.304	.144	1.16	.568	.592	.22	1.52	8.2	31.	31.	—	2,400
5551	Aug. 2	Aug. 3	*	"	M. F.2	"	405.6	364.8	40.8	39.2	50.	9.2	B.	38.25	14.8	12.5	2.3	.64	.496	.352	.144	1.48	.792	.688	.32	1.48	8.	29.	29.	—	77,000
5590	" 8	" 9	†	"	M. F.04	"	429.2	374.	55.2	54.8	43.2	11.6	Gh.	46.	12.5	11.5	1.	1.184	.544	.384	.16	1.16	.44	.72	.35	1.88	7.	26.	23.	?	2,450
5639	" 15	" 16	†	"	M. F.06	"	416.4	374.	42.4	74.8	65.6	9.2	Gh.	48.	12.1	11.6	.5	1.024	.448	.32	.128	1.32	.76	.56	.36	1.96	8.	26.	22.	....	....
5688	" 22	" 23	†	"	M. F.2	"	396.	394.4	1.6	44.8	44.4	.4	Gh.	57.	14.5	12.1	2.4	1.664	.848	.704	.144	1.8	1.16	.64	.44	1.52	6.8	28.	29.	—	4,150
5744	" 29	" 30	†	"	M. F.03	"	412.	388.8	23.2	48.4	39.2	9.2	Gh.	60.	13.8	12.5	1.3	.96	.56	.32	.24	1.4	.92	.48	.4	1.88	6.8	28.	27.	....	21,800
5811	Sept. 6	Sept. 7	†	"	M. F.03	"	423.2	386.8	36.4	35.2	34.4	.8	B.	60.75	11.9	7.5	4.4	1.12	.544	.352	.192	1.32	1.08	.24	.4	1.76	6.8	29.	30.	....	32,600
5849	" 12	" 13	*	"	M. F.05	"	428.4	385.2	43.2	58.8	52.	6.8	B.	63.	12.3	6.8	5.5	1.28	.544	.368	.176	1.4	.84	.56	.35	2.	6.8	20.	21.	+	4,550
5895	" 18	" 19	†	"	M. F.02	"	422.8	394.4	28.4	36.8	32.8	4.	G.	68.	14.	8.5	5.5	2.24	.656	.32	.336	1.72	.856	.864	.6	2.28	7.1	21.	21.	+	6,300
5945	" 26	" 27	*	"	M. F.04	"	407.2	385.2	22.	36.	33.6	2.4	G.	71.	13.	9.2	3.8	1.12	.8	.304	.496	1.46	.74	.72	1.75	4.	7.	18.	20.	—	950
5994	Oct. 3	Oct. 4	*	"	M. F.2	"	404.	375.2	28.8	51.6	43.2	8.4	G.	68.5	14.5	12.6	1.9	3.36	.864	.368	.496	2.1	.868	1.232	.6	2.4	7.	15.	11.	?	4,150
6042	" 10	" 11	†	"	M. F.15	"	441.2	435.6	5.6	28.4	27.2	1.2	G.	76.	12.3	9.4	2.9	5.6	.64	.4	.24	1.464	.472	.992	.17	2.8	7.1	16.	16.	—	15,500
6088	" 17	" 18	†	"	M. F.05	"	439.2	422.4	16.8	29.6	28.	1.6	G.	68.	9.1	8.1	1.	4.	.608	.432	.176	1.24	.84	.4	.25	1.84	7.2	13.	17.	—	8,350
6169	" 25	" 26	*	"	M. F.03	"	408.	389.6	18.4	28.8	25.6	3.2	G.	60.4	8.8	8.1	.7	5.2	.56	.4	.16	1.08	.776	.304	.15	1.68	7.2	11.	16.	—	6,000
6212	Nov. 1	Nov. 2	*	"	M. F.04	"	407.6	375.6	32.	41.2	19.2	22.	G.	57.	8.1	7.2	.9	3.52	.56	.336	.224	.968	.648	.32	.14	1.88	7.3	10.	13.	—	12,500
6260	" 7	" 8	†	"	M. F.04	"	396.8	379.2	17.6	29.6	28.	1.6	G.	54.5	6.8	6.7	.1	4.8	.432	.256	.176	.92	.488	.432	.11	1.48	7.3	9.	7.	—	3,100
6315	" 14	" 15	*	"	M. F.04	"	388.4	368.4	20.	41.6	32.4	9.2	B.	50.	7.	6.2	.8	3.52	.448	.304	.144	.808	.552	.256	.09	1.12	7.5	9.	7.	—	1,000
6344	" 22	" 23	†	Little	M. F.03	"	381.6	372.	9.6	32.	28.	4.	G.	39.5	7.2	6.8	.4	2.56	.432	.24	.192	.744	.552	.192	.15	2.2	7.6	8.	7.	+	2,000
6407	" 28	" 29	†	"	M. F.03	"	357.2	356.8	.4	48.8	48.8	0.0	B.	37.	7.6	7.6	0.0	3.2	.432	.32	.112	.936	.744	.192	.21	1.92	7.6	8.	6.	—	10,800
6449	Dec. 5	Dec. 6	†	"	M. F.03	"	384.4	376.4	8.	36.4	32.	4.4	G.	41.	8.	8.	0.0	3.68	.4	.336	.064	.904	.584	.32	.013	1.68	7.3	3.	9.	+	15,900
6506	" 12	" 14	†	"	M. F.05	"	377.2	360.	17.2	49.2	44.8	4.4	B.	44.	9.6	9.5	.1	4.	.576	.48	.096	1.192	.936	.256	.085	1.36	7.6	2.	6.	+	51,000
6548	" 19	" 20	†	Cons'd	M. F.15	"	351.2	348.4	2.8	33.6	31.6	2.	G.	35.	10.	9.1	.9	4.32	.672	.48	.192	1.512	.81	.672	.08	1.2	8.	0.	—11.	+	113,000

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 14

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—ILLINOIS RIVER, AVERYVILLE, ILL.

Serial No.	Date of		Appearance.			Odor.	Residue on Evaporation.						Color on Ignition.	Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
	1899 Collection.	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis. solv'd	Loss on Ig'n. Sus. pnd'd			Total.	By Dissolved.	By Suspd Matter.	Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis. solv'd	Albuminoid Am. Sus. pnd'd	Total.	Dissolved.	Suspended.	Nitrites.	Nitrates.					
4982	May 1	May 2	*	Cons'd	M. F.04	None	318.	302.8	15.2	50.	49.2	.8	B.	13.	12.5	9.3	3.2	.208	.48	.224	.256	1.05	.53	.52	.084	.95	32.	....	......	....	....
5039	" 15	" 16	*	"	M. F.2	"	430.4	374.8	55.6	63.6	60.	3.6	B.	19.2	14.	9.4	4.6	.864	.512	.416	.096	1.29	.89	.4	.085	.96	29.9	....	......	....	....
5073	" 22	" 23	*	"	M. F.04	"	391.2	354.	37.2	31.2	21.2	10.	B.	10.5	14.6	10.	4.6	.96	.416	.352	.064	1.29	.97	.32	.045	.52	31.3	....	......	....	....
5132	" 30	June 1	+	"	M. F.1	"	394.4	341.2	53.2	58.8	39.2	19.6	B.	16.	11.3	10.7	.6	.352	.48	.32	.16	1.05	.89	.16	.08	1.48	30.4	....	......	....	....
5192	June 8	" 9	+	"	M. F.15	"	415.6	290.	125.6	34.4	32.	2.4	B.	17.5	13.1	11.4	1.7	.288	.524	.416	.108	1.21	.986	.251	.25	1.8	31.8	25.	26.	....	4,650
5253	" 20	" 21	*	"	M. F.1	"	365.2	333.2	32.	35.2	32.8	2.4	B.	17.5	13.3	11.1	2.2	.088	.448	.384	.064	1.32	.952	.368	.13	1.2	29.4	26.	27.	....	9,100
5302	" 27	" 28	+	"	M. F.1	"	407.6	362.4	45.2	29.6	28.8	.8	B.	25.	14.	12.7	1.3	.256	.512	.432	.08	1.24	1.048	.192	.185	1.68	28.	26.	28.	—	12,350
5333	July 3	July 4	*	"	M. F.2	"	400.4	356.4	44.	69.6	62.4	7.2	B.	26.	14.3	12.3	2.	.144	.528	.368	.16	1.32	.92	.4	.13	1.76	27.1	26.	25.	+	13,500
5391	" 10	" 12	+	"	M.	"	396.8	374.	22.8	26.	24.	2.	B.	37.25	13.5	13.2	.3	.352	.544	.336	.208	1.24	.728	.512	.26	1.8	27.7	26.	28.	?	8,650
5439	" 18	" 19	*	"	M. F.15	"	423.2	378.4	44.8	50.8	48.4	2.4	Gh.	16.	12.9	11.3	1.6	1.6	.512	.352	.16	1.32	.824	.496	.46	2.	29.1	26.	26.5	....	....
5486	" 24	" 25	+	"	M. F.1	"	315.2	294.4	20.8	50.4	48.8	1.6	Gh.	31.	9.1	8.3	.8	.704	.512	.304	.208	1.16	.856	.304	.29	1.76	28.8	28.	30.		5,925
5536	Aug. 1	Aug. 2	*	"	M. F.2	"	386.4	323.6	62.8	61.2	59.2	2.	Gh.	34.	12.7	10.5	2.2	.384	.448	.288	.16	1.16	.728	.432	.25	1.52	27.6	25	21		7,100
5587	" 8	" 9	+	"	M. F.06	"	392.4	338.8	53.6	49.6	48.	1.6	Gh.	30.	12.2	10.8	1.4	.16	.352	.272	.08	1.08	.856	.224	.15	1.4	27.6	24.	20.	—	2,800
5631	" 15	" 16	+	"	M. F.15	"	400.	352.4	17.6	85.2	76.	9.2	Gh.	38.25	11.9	10.6	1.3	.416	.416	.24	.176	1.016	.728	.288	.22	1.8	27.	23.	26.		21,000
5681	" 22	" 23	*	"	M. F.2	"	387.6	337.2	50.1	58.	34.8	23.2	Gh.	43.	12.5	10.5	2.	.24	.544	.272	.272	1.24	.824	.416	.12	1.4	26.7	26.	26.	+	1,950
5741	" 29	" 30	*	"	M. F.15	"	375.2	315.2	30	36.8	36.8	0.0	Gh.	44.	13.	9.1	3.9	.272	.576	.288	.288	1.48	.712	.768	.08	1.	26.7	28.	25.	—	4,150
5794	Sept. 5	Sept. 6	*	"	M. F.04	"	392.4	367.6	21.8	36.4	36.4	0.0	B.	50.25	10.8	7.2	3.6	.368	.416	.304	.112	1.08	.856	.224	.12	1.08	27.	27.	26.	—	5,900
5840	" 12	" 13	+	"	M. F.1	"	393.2	360.4	32.8	37.2	31.4	2.8	G.	54.5	11.6	10.8	.8	.24	.512	.384	.128	1.4	.76	.64	.09	1.16	27.3	21.	26.		2,200
5890	" 19	" 20	+	Little	M. F.03	"	390.8	368.4	22.1	58.	51.4	3.6	B.	54.75	11.7	7.5	4.2	.168	.64	.336	.304	1.32	.824	.496	.12	1.08	27.6	20.	17.	—	3,250
5944	" 26	" 27	*	"	M. F.04	"	383.6	368.	15.6	45.6	36.	9.6	GB.	58.	10.1	8.3	1.8	.128	.512	.416	.096	1.028	.804	.221	.17	1.16	27.4	12.	11.	—	1,050
5992	Oct. 3	Oct. 4	+	"	M. F.2	"	392.8	384.8	8.	37.2	36.8	.4	G.	69.	11.	9.3	1.7	.128	.592	.336	.256	1.16	.708	.752	.85	3.2	27.3	12.	15.	+	2,000
6037	" 10	" 11	*	"	M. F.1	"	408.	391.6	16.4	34.	34.	0.0	G.	66.5	11.4	9.6	1.8	.192	.688	.336	.352	1.461	.708	.756	.75	1.4	27.3	15.	17.	—	1,975
6087	" 17	" 18	+	"	M. F.03	"	410	392.4	17.6	39.6	12.8	26.8	G.	67.	9.8	8.8	1.	.256	.464	.1	.064	1.32	.808	.512	1.	3.68	27.6	18.	13.	—	5,500
6151	" 21	" 25	+	Cons'd	M. F.08	"	444.8	414.8	30.	27.6	14.8	12.8	G.	72.5	10.5	8.8	1.7	1.12	.64	.24	.4	1.32	.584	.736	1.5	4.	27.6	15.	18.	+	5,600
6197	" 31	Nov. 1	+	"	M. F.03	"	421.2	407.6	13.6	29.2	36.8	...	G.	62.	8.7	8.2	.5	1.44	.48	.304	.176	.968	.52	.448	1.35	3.6	27.8	12.	8.	—	2,550
6247	Nov. 7	" 8	+	"	F.04	"	404.8	389.2	15.6	23.6	22.8	.8	B.	55.	6.5	6.1	.4	3.2	.384	.304	.08	.52	.424	.096	.35	2.6	27.8	7.	8.	—	550
6295	" 14	" 15	+	"	M. F.03	"	398.8	380.8	18.	45.2	44.8	.4	B.	51.	7.1	6.6	.5	3.2	.416	.288	.128	.872	.552	.32	.1	1.	28.2	9.	9.	—	1,100
6339	" 21	" 22	+	"	M. F.03	"	372.4	354.4	18.	31.2	22.	9.2	B.	50.5	7.1	6.4	.7	3.52	.48	.288	.192	.92	.68	.21	.07	1.6	28.3	10.	12	—	1,200
6408	" 28	" 29	+	Little	M. F.03	"	350.4	348.	2.4	45.6	44.8	.8	B.	34.	7.2	7.2	0.0	1.92	.32	.176	.144	.776	.552	.224	.06	1.84	28.1	6.	4.	—	2,800
6448	Dec. 5	Dec. 6	†	"	M. F.02	"	385.6	364.4	21.2	48.4	40.8	7.6	G.	36.	7.7	6.7	1.	1.6	.432	.256	.176	.936	.52	.416	.08	2.8	27.9	3.	—2	....	....
6502	" 12	" 13	+	"	M. F.04	"	380.	376.4	3.6	44.4	40.8	3.6	G.	39.5	9.1	8.3	.8	1.4	.18	.1	.08	1.	.68	.32	.08	2.32	28.2	5.	2.		3,900
6551	" 19	" 20	+	Cons'd	M. F.05	"	374.4	358.4	16.	41.6	41.6	0.0	G.	41.	9.6	8.9	.7	4.	.18	.432	.018	1.	.808	.192	.08	1.4	28.9	1.	2.	+	13,600
6577	" 26	" 27	+	"	M. F.04	"	376.4	372.	4.4	31.2	28.4	2.8	G.	33.75	9.9	9.4	.5	3.36	.432	.336	.096	.84	.68	.16	.07	2.2	29.8	0.	—2.	—	10,400

TURBIDITY *Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight.

COLOR M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray Brown.

TABLE 15.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER — ILLINOIS RIVER, WESLEY CITY, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5122	May 29	May 31	*	Little	M. F.1	None	399.2	366.	33.2	79.2	74.4	4.8	B.	16.55	12.6	9.3	3.3	.752	.64	.288	.352	2.01	.89	1.12	.08	1.52	3.	....	......	....	....
5191	June 7	June 9	†	Cons'd	M. F.1	"	402.4	356.4	46.	55.6	54.8	.8	B.	20.	14.5	10.8	3.7	.48	.56	.432	.128	1.56	1.082	.478	.22	1.6	4.	....	21.	....	1,787,500
5208	" 12	" 11	*	"	M. F.2	"	372.4	302.	70.4	41.6	28.8	12.8	B.	16.5	14.3	11.1	3.2	.4	.608	.496	.112	1.64	.792	.848	.11	1.4	6.	....	27.	....	1,865,000
5254	" 19	" 21	*	"	M. F.05	"	389.2	316.4	72.8	46.	42.4	3.6	B.	15.5	13.5	11.3	2.2	.48	.448	.352	.096	1.32	1.048	.272	.08	1.28	8.	....	30.	....	1,108,340
5301	" 26	" 28	†	"	M. F.1	"	399.2	350.	49.2	27.6	12.4	15.2	B.	24.	12.9	12.4	.5	.16	.448	.4	.048	1.24	1.048	.192	.185	1.6	8.	....	30.	....	815,000
5337	July 3	July 5	*	"	M. F.15	"	327.2	280.4	46.8	58.8	50.8	8.	B.	25.	14.2	12.5	1.7	.144	.48	.352	.128	1.4	.952	.448	.13	1.6	6.	....	24.	+	300,000
5384	" 10	" 11	†	"	M. F.2	"	417.6	379.2	38.4	67.6	67.6	0.0	B.	38.	15.3	14.2	1.1	.224	.864	.528	.336	2.12	1.304	.816	.2	1.76	2.6	25.	30.	+	120,000
5185	" 24	" 26	†	"	M. F.1	"	322.	286.8	35.2	46.8	43.2	3.6	B.	31.	11.4	8.7	2.7	.432	.384	.304	.08	1.08	.856	.224	.27	1.64	6.	....	33.	+	3,750,000
5683	Aug. 21	Aug. 22	*	"	M. F.1	"	409.6	371.2	38.4	66.	49.2	16.8	Gh.	43.	14.3	11.1	3.2	.512	.88	.368	.512	1.72	.856	.864	.22	1.48	6.	....	......	+	3,900,000
5739	" 28	" 30	*	"	M. F.2	"	388.8	350.	38.8	51.6	50.4	1.2	Gh.	43.	11.3	8.7	2.6	.24	.544	.304	.24	1.24	.84	.4	.07	.8	7.	....	......	+	813,000
5796	Sept. 5	Sept. 6	*	"	M. F.08	"	365.6	353.2	12.4	52.8	49.2	3.6	B.	48.	14.9	8.3	6.6	.224	.928	.384	.544	2.12	1.048	1.072	.09	.36	....	28.	38.	....	590,000
5813	" 12	" 13	†	"	M. F.08	"	380.4	357.6	22.8	33.2	32.8	.4	B.	49.75	13.	11.8	1.2	.96	.512	.4	.112	1.976	1.24	.736	.18	.4	1.	20.	27.	+	560,000
5943	" 26	" 27	*	"	M. F.04	"	362.8	358.8	4.	40.8	40.	.8	GB.	56.	10.6	7.9	2.7	.096	.608	.368	.24	1.38	.71	.64	.08	.88	1.	15.	18.	+	43,300
5991	Oct. 3	Oct. 4	†	"	M. F.06	"	430.8	385.2	45.6	62.	53.2	8.8	G.	63.	13.3	11.2	2.1	.08	.704	.352	.352	1.78	.708	1.072	.2	1.72	1.	12.	24.	+	55,000
6052	" 10	" 12	*	"	M. F.2	"	474.4	354.8	119.6	49.2	46.	3.2	B.	68.	17.1	11.7	5.4	1.36	.88	.512	.368	1.86	1.	.86	.575	1.6	1.	12.	22.	....	1,270,000
6096	" 18	" 19	*	"	M. F.2	"	396.4	392.	4.4	30.8	30.	.8	G.	67.5	13.4	11.6	1.8	.88	1.12	.416	.704	2.84	1.	1.84	1.	1.48	1.	15.	21.	+	4,400,000
6181	" 26	" 27	*	"	M. F.04	"	462.	422.8	39.2	34.4	21.2	13.2	B.	68.3	12.2	9.6	2.6	1.76	1.36	.432	.928	2.44	1.	1.44	1.3	2.8	1.	16.	15.	+	3,770,000
6195	" 31	Nov. 1	†	"	M. F.08	"	434.8	430.	4.8	52.8	51.2	1.6	G.	65.	9.3	9.2	.1	.288	.64	.336	.304	1.32	.68	.64	1.	1.88	1.5	10.	15.	....	200,000
6254	Nov. 7	" 9	†	"	M. F.05	"	421.6	402.8	18.8	46.4	40.	6.4	B.	57.5	9.4	8.2	1.2	2.32	.768	.32	.448	1.416	.904	.512	.55	2.6	1.	6.	16.	+	40,000
6312	" 15	" 16	*	"	M. F.03	"	399.2	381.	15.2	34.8	30.8	4.	B.	54.5	10.8	7.1	3.7	3.2	1.28	.576	.704	2.44	1.	1.44	.375	2.	2.	....	16.	+	660,000
6361	" 22	" 24	†	"	M. F.03	"	399.6	367.2	32.4	43.6	40.	3.6	G.	51.	7.1	6.8	.3	3.2	.48	.336	.144	.808	.52	.288	.075	1.6	1.5	0.	5.	+	1,920,000
6472	Dec. 5	Dec. 8	†	"	M. F.01	"	377.2	356.4	20.8	42.	32.	10.	B.	35.	10.	6.9	3.1	1.6	.56	.352	.208	1.32	.808	.512	.007	2.8	.5	....	8.	....	....
6523	" 13	" 15	†	"	M. F.03	"	400.4	323.6	76.8	48.4	45.2	3.2	G.	38.5	10.5	7.4	3.1	2.72	.592	.32	.272	1.12	.744	.376	.07	2.8	2.	....	—1.	+	20,000
6549	" 20	" 20	†	"	M. F.04	"	378.8	358.	20.8	36.	31.8	1.2	G.	38.	9.9	8.9	1.	3.2	.512	.4	.112	1.	.68	.32	.08	1.88	2.	....	0.	+	7,000
6592	" 28	" 29	†	Little	M. F.03	"	395.2	380.4	14.8	48.8	37.2	11.6	G.	33.	11.3	9.7	1.6	3.2	.48	.384	.096	.932	.776	.156	.045	2.4	2.6	....	—12.	....	35,000

TURBIDITY—*Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 16.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, PEKIN, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5087	May 24	May 27	*	Cons'd	M. F.03	None	395.2	374.	21.2	41.2	38.	3.2	B.	15.8	13.3	11.3	2.	.96	.56	.48	.08	1.13	.89	.24	.044	1.6	3 6	18	19.	....	..
5120	" 30	" 31	*	Little	M. F.1	"	419.2	376.8	42.4	73 6	70.	3.6	B.	15.	14.8	11.2	3.6	.96	.64	.352	.288	1.45	.762	.688	.08	1.52	3 6	25	28.	....	....
5162	June 6	June 7	*	Cons'd	M. F.15	"	436.	328.	108.	44.8	42.8	2.	B.	15.	14.3	10.6	3.7	.544	.608	.416	.192	1.37	.86	.51	.2	1.52	4.7	26.	33.	....	307.000
5210	" 13	" 14	*	"	M. F.2	"	374.8	328.	46.8	38.8	38.8	0.0	B.	14.5	14.	11.2	2.8	.72	.576	.336	.24	1.64	1.048	.592	.25	.8	3.6	25.	28.	...	1.097.500
5258	" 21	" 22	*	"	M. F.2	"	448.4	341.6	106.8	81.6	18.4	63.2	B.	16.	15.1	12.3	2.8	.576	.544	.384	.16	1.56	.92	.64	.17	1.36	2.	26.	34.	...	585.000
5310	" 27	" 29	†	"	F.15	Sli'ht	390.	358.4	31.6	34.4	32.8	1.6	B.	23.	15.6	13.4	2.2	.96	.704	.448	.256	1.4	.856	.544	.34	1.12	1.	27.	28.	....	1.010.500
5355	July 6	July 7	*	"	M. F.05	None	375.6	346.8	28 8	57.6	51.2	6.4	B.	26.	14.3	13.3	1.	1.2	.576	.416	.16	1.4	.984	.416	.24	1.2	1	21.	30.	‡	300.000
5403	" 12	" 13	†	"	M. F.15	"	409.6	381.6	28.	62.8	47.6	15.2	B.	36.	15.	13.6	1.4	.72	.672	.432	.24	1.368	1.08	.288	.34	1.22	1.	28.	33.	‡	1.190.000
5446	" 19	" 20	*	"	M. F.1	"	379.6	335.2	44.4	42.8	38.8	4.	Gh.	42.	13.5	11.9	1.6	.836	.448	.288	.16	1.08	.724	.356	.32	1.4	2	26.	32.	‡	610.500
5492	" 25	" 26	†	"	M. F.05	"	316.8	285.2	31.6	42.8	42.	.8	Gh.	31.	11.3	9.8	1.5	.96	.352	.304	.048	1.	.824	.176	.27	1.28	1.5	30.	34.	+	820.000
5533	Aug. 1	Aug. 2	*	"	M. F.2	"	345.6	320.	25.6	67.2	63.6	3.6	Gh.	34.	15.1	13.	2.1	.864	.736	.48	.256	1.88	1.048	.832	.4	1.04	1.	25.	34	?	3.635.000
5583	" 8	" 9	†	"	M. F.06	"	342.4	322.4	20.	47.2	38.4	8.8	Gh.	29.	13.3	12.	1.3	.672	.496	.368	.128	1.32	.952	.368	.25	.72	1.	21.	23.	‡	3.073.333
5635	" 15	" 16	†	"	M. F.15	"	378.8	350.4	28.1	77.2	65.6	11.6	Gh.	35.5	12.2	11.	1.2	.608	.432	.352	.08	1.496	.792	.704	.36	1.44	.5	25.	33.	....	....
5682	" 22	" 23	†	"	M. F.15	"	376.	364.8	11.2	55.6	52.	3.6	Gh.	93.	13.1	11.5	1.6	.48	.672	.4	.272	1.56	.92	.64	.24	1.48	.5	26.	40.	+	950.000
5740	" 29	" 30	*	"	M. F.1	"	374.8	352.	22.8	38.	37.2	.8	Gh.	43.	14.3	9.7	4.6	.432	.752	.352	.4	1.88	1.	.88	.12	.76	1.0	29	40.	....	55.000
5799	Sept. 5	Sept. 6	*	"	M	"	378.4	370.	8.4	60.4	54.8	5.6	Gh.	46.5	14.1	9.9	4.2	.24	.896	.48	.416	1.72	1.08	.64	.09	.44	1	28.	41.	‡	40.000
5841	" 12	" 13	†	"	M. F.8	"	375.6	363.2	12.4	28.	28.	0.0	Gh.	50.	13.4	7.8	5.6	1.024	.576	.416	.16	1.72	.984	.736	.2	.24	1.	20	27.	‡	145.000
5898	" 18	" 21	*	"	M. F.04	"	375.6	323.2	52 4	39.2	38.8	.4	Gh.	41.	13.2	8.3	4.9	.512	.672	.336	.336	1.8	.856	.944	.012	.68	1.6	20.	21.	+	570.000
5946	" 26	" 27	*	"	M. F.06	"	440.	364.	76.	36.	33.6	2.4	GB.	56.	14.8	9.	5.8	.496	1.12	.416	.704	2.1	.964	1.136	1	1.24	1.	15.	18.	+	510.000
5990	Oct. 3	Oct. 4	†	"	M. F.07	"	382.4	368.8	13.6	46.8	44.4	2.4	GB.	55.	11.8	8.	3.8	.336	.752	.368	.384	1.62	.804	.816	.11	1.4	1.	12.	21.	+	920.000
6053	" 10	" 12	*	"	M. F.1	"	435.2	334.4	100.8	29.6	25.6	4.	B.	58.5	11.4	....	....	.672	.88	.4	.18	1.38	.744	.636	.475	1.88	1.	12.	22.	....	520.000
6097	" 18	" 19	*	"	M. F.08	"	398.4	386.	12.4	27.2	25.6	1.6	G.	66.5	11.8	11.5	.3	.8	.72	.416	.304	1.64	.936	.704	.85	2.4	1.	15.	21.	?	650.000
6182	" 26	" 27	*	"	M. F.04	"	424.	410.	14.	33.2	30.8	2.4	B.	64.7	10.6	9.	1.6	1.088	1.04	.336	.704	1.72	.552	1.168	1.	3.2	1.	16.	15.	+	2.100.000
6196	" 31	Nov. 1	†	"	M. F.3	"	460.8	426.4	34.4	47.2	38.8	8.4	G.	65.	18.	12.	6.	.96	1.64	.544	1.096	3.64	1.16	2.48	1.5	1.88	1.5	10.	14.	‡	2.780.000
6253	Nov. 7	" 9	†	"	M. F.04	"	418.8	410.	8.8	37.2	24.8	12.4	B.	60.2	8.	7.2	.8	1.76	.528	.32	.208	.968	.712	.256	1.	2 8	1.	6.	15.	....	170.000
6313	" 15	" 16	*	"	M F.04	"	398.8	377.6	21.2	19.6	16.8	2.8	B.	52.5	7.5	5.7	1.8	2.56	.48	.336	.144	1.256	.584	.672	.1	.24	2.	10.	16.	+	145.000
6360	" 22	" 24	†	"	M F.03	"	389.6	372.	17.6	39.6	34.4	5.2	G.	50.	10.5	7.5	3.	4.8	1.04	.48	.56	1.8	.904	.896	.08	1.45	1.5	0.	5.	+	95.000
6434	" 30	Dec. 2	†	"	M. F.03	"	362.8	348.4	14.4	54.	51.6	2.4	B.	35.	7.2	6.	1.2	1.92	.384	.32	.064	1.064	.808	.256	.05	1.52	1.5	0.	9	?	870,000
6471	Dec. 5	" 8	†	"	M. F.04	"	376.8	363.2	14.6	48.	46.4	1.6	B.	36.5	10.3	6.5	3.8	1.6	.608	.32	.288	1.384	.808	.576	.008	3.2	.5	....	......	....	....
6524	" 13	" 15	†	"	M. F.04	"	395.2	367.6	27.6	40.	37.6	2.4	G.	38.5	9.6	8.2	1.4	2.56	.736	.384	.352	1.64	.84	.8	.07	2.8	2.	....	−1.	‡	45.000
6550	" 19	" 20	†	"	M. F.04	"	376.4	363.2	13.2	44.	41.2	2.8	G.	39.	9 7	8.9	.8	3.68	.512	.4	.112	1.	.648	.352	.08	2.	2.	....	0	+	7.000
6563	" 28	" 29	†	Little	M. F.03	"	383.2	380.4	2.8	39.6	38.	1.6	G.	34.	9.9	9.7	.2	3 04	.448	.352	.096	1.064	.808	.256	.055	2.32	2.5	....	12.	....	155.000

TURBIDITY—*Decided. §Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish, Blk., Black. GB., Gray-Brown.

TABLE 17.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, HAVANA.

Report of ARTHUR W. PALMER, T. J. BURRILL, University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Susp'd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4990	May 2	May 3	*	Cons'd	M.	None	324.4	293.2	31.2	50.8	50.	.8	B.	11.	13.	9.	4.	1.44	.48	.248	.232	1.29	.85	.44	.065	.5	....	....	......	....	....
5011	" 9	" 10	†	"	M. F.04	"	341.2	305.6	35.6	33.6	32.	1.6	B.	13.	11.2	10.1	1.1	.56	.44	.381	.056	1.21	.97	.24	.1	1.6	....	....	......	....	....
5018	" 16	" 17	†	Little	F.01	"	359.	316.6	42.4	23.6	4.	19.6	B.	18.	12.8	12.2	.6	1.024	.48	.352	.128	1.13	.89	.24	.12	1.12	....	....	......	....	....
5078	" 23	" 24	*	Cons'd	M. F.04	"	426.	344.4	81.6	47.2	43.2	4.	B.	18.25	15.4	12.8	2.6	.96	.56	.384	.176	1.45	1.114	.336	.075	1.08	....	....	......	....	....
5114	" 30	" 31	†	"	M. F.1	"	347.6	328.	19.6	28.	26.4	1.6	B.	13.15	11.7	10.3	1.4	.72	.448	.384	.064	1.05	.86	.19	.12	1.56	8.7	21.	26.	....	....
5123	" 30	June 1	*	Little	M. F.15	"	366.	319.2	46.8	52.	32.2	19.8	B.	11.	10.4	9.	1.4	.64	.416	.288	.128	1.21	.506	.704	.115	.92	9.3	....	......	....	....
5206	June 13	" 14	*	Cons'd	M. F.10	"	361.6	317.6	44.	37.6	36.8	.8	B.	15.	12.3	10.5	1.8	.72	.416	.352	.064	1.4	.821	.576	.24	1.2	8.8	25.	27.	....	10,600
5216	" 20	" 21	*	"	M. F.15	"	356.8	343.6	13.2	50.	48.8	1.2	B.	14.5	14.3	11.	3.3	.396	.512	.32	.192	1.16	.856	.304	.16	1.12	7.5	26.	36.	....	6,400
5303	" 28	" 29	*	"	M. F.1	"	371.2	321.4	46.8	29.2	26.4	2.8	B.	19.	13.1	12.	1.1	.688	.512	.464	.048	1.32	1.016	.304	.14	.76	5.2	25.	27.	....	3,450
5352	July 5	July 6	*	"	M. F.03	"	391.2	318.8	72.4	44.	39.2	4.8	B.	21.5	14.1	6.5	7.6	.8	.48	.352	.128	1.48	1.112	.368	.18	.4	4.7	26.	24.	+	13,300
5401	" 12	" 13	*	"	M. F.1	"	389.6	356.8	32.8	72.	68.8	3.2	Gh.	28.	14.5	11.8	2.7	.88	.416	.352	.064	1.16	.888	.272	.23	1.12	4.1	26.	29.	+	1,420
5417	" 19	" 20	*	"	M. F.08	"	358.	340.4	17.6	44.4	40.	4.4	Gh.	36.	12.6	11.7	.9	.784	.48	.288	.192	1.	.724	.276	.3	1.28	4.9	27.	30.	+	5,880
5494	" 26	" 27	†	"	M. F.07	"	306.	292.8	13.2	47.6	47.2	.4	Gh.	30.	11.	10.2	.8	.96	.416	.272	.144	1.08	.76	.32	.24	.84	4.8	30.	35.	+	3,200
5540	Aug. 2	Aug. 3	*	"	M. F.2	"	315.2	314.	31.2	74.	51.6	22.4	Gh.	30.	12.7	11.7	1.	.64	.448	.384	.064	1.24	.792	.448	.18	.76	4.	27.	33.	?	3,650
5601	" 9	" 10	*	"	M. F.04	"	370.	320.8	49.2	49.6	42.4	7.2	Gh.	31.	11.7	10.	1.7	.96	.384	.224	.16	.92	.728	.192	.17	.4	4.1	26.	30.	—	9,450
5640	" 16	" 17	*	"	M. F.07	"	410.	341.2	68.8	80.	68.4	11.6	Gh.	30.5	13.4	11.5	1.9	.972	.432	.304	.128	1.32	.728	.592	.23	.6	3.2	25.	27.5	....	....
5695	" 23	" 24	†	"	M. F.05	"	408.	347.2	60.8	46.4	45.2	1.2	Gh.	35.	13.3	9.8	3.5	.59	.592	.32	.272	1.4	.728	.672	.23	.64	3.	26.	31.	—	3,550
5749	" 30	" 31	†	"	M. F.04	"	397.2	334.4	62.8	44.8	24.	20.8	Gh.	40.	12.	10.8	1.2	.544	.64	.32	.32	1.4	.84	.56	.11	.36	2.2	29.	26.	—	6,250
5803	Sept. 6	Sept. 7	†	"	M. F.06	"	395.6	340.	55.6	29.6	29.2	.4	Gh.	41.	13.1	8.6	4.5	.768	.64	.4	.24	1.72	.92	.8	.002	.6	2.4	29.	33.	—	3,400
5859	" 13	" 14	*	"	M. F.1	"	423.2	352.8	70.4	49.2	46.4	2.8	Gh.	44.25	12.9	7.5	5.4	.928	.64	.4	.24	1.56	1.	.56	.05	.32	2.6	22.	22.	+	3,500
5897	" 20	" 21	†	"	M. F.01	"	387.6	291.8	92.8	44.4	44.	.4	Gh.	35.5	12.9	8.2	4.7	.608	.48	.272	.208	1.4	.824	.576	.08	.6	3.6	14.	12.	+	12,900
5962	" 27	" 28	*	Much	M. F.06	"	415.4	352.8	63.6	46.4	40.	6.4	GB.	50.	12.2	9.3	2.9	.752	.592	.368	.224	1.54	1.06	.48	.09	.64	3.	16.	17.	—	4,750
6008	Oct. 4	Oct. 5	*	Cons'd	M. F.08	"	406.8	351.6	55.2	45.2	21.2	24.	B.	51.	15.	10.3	4.7	.432	.768	.4	.368	1.86	.772	1.088	.24	1.16	3.	14.5	13.	—	9,400
6055	" 11	" 12	*	"	M. F.15	"	443.6	389.6	54.	32.8	26.4	6.4	B.	61.5	13.4	11.2	2.2	.64	.56	.4	.16	1.32	.6	.72	.45	1.32	2.6	15.	21.	+	6,000
6104	" 18	" 19	†	"	M. F.25	"	402.4	352.	50.4	21.6	19.2	2.4	B.	60.5	14.3	7.1	7.2	1.6	.704	.432	.272	1.96	1.096	.864	.7	.56	3.2	17.	9.	+	21,900
6170	" 25	" 26	*	"	M. F.05	"	417.6	375.6	42.	18.4	17.6	.8	G.	58.2	9.2	7.8	1.4	1.6	.672	.48	.192	1.224	1.	.224	.625	1.76	3.	12.	19.	....	....
6211	Nov. 1	Nov. 2	*	"	M. F.04	"	436.8	415.2	21.6	42.8	21.8	18.	G.	63.5	10.5	9.	1.5	1.472	.624	.368	.256	1.384	.584	.8	.9	2.6	3.5	9.	8.	+	12,200
6258	" 8	" 9	†	"	M. F.04	"	414.4	401.	10.4	49.6	46.4	3.2	B.	57.	9.3	8.1	1.2	2.56	.704	.416	.288	1.4	.808	.592	.875	2.8	4.6	7.	15.	?	331,000
6317	" 15	" 16	*	"	M. F.04	"	397.6	374.	23.6	35.6	32.4	3.2	B.	53.	8.2	7.9	.3	2.7	.736	.4	.336	1.16	.68	.48	.25	2.	3.7	10.	11.	+	138,000
6357	" 22	" 23	†	"	M. F.04	"	383.2	363.6	19.6	27.6	22.	5.6	G.	48.	8.2	7.	1.2	3.36	.48	.288	.192	1.48	.52	.96	.07	1.18	4.4	11.	12.	+	150,000
6121	" 29	" 30	†	"	M. F.03	"	365.6	356.	9.6	41.2	39.6	1.6	G.	43.	8.5	7.4	1.1	3.28	.56	.336	.224	1.224	.872	.352	.06	1.28	4.	6.	5.	+	164,000
6469	Dec. 6	Dec. 8	†	"	M. F.03	"	366.	358.4	7.6	38.4	35.2	3.2	B.	34.	9.6	8.4	1.2	1.76	.672	.352	.32	1.88	.808	1.072	.08	1.52	3.8	2.	4.	+	275,000
6522	" 13	" 15	†	"	M. F.12	"	362.8	357.2	5.6	41.6	39.2	2.4	G.	35.5	10.8	9.4	1.4	2.56	.96	.432	.528	1.64	.904	.736	.08	2.4	4.3	2.	2.	+	574,000
6558	" 20	" 21	†	"	M. .03	"	373.2	371.2	2.	31.2	30.8	.4	G.	36.	13.4	9.8	3.6	2.24	.512	.432	.08	1.16	.84	.32	.08	1.76	4.1	1.	2.	+	55,000

TURBIDITY—*Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION. G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 18.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—SANGAMON RIVER, CHANDLERVILLE, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n.: Tot'l	Loss on Ig'n.: Dissolv'd	Loss on Ig'n.: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5131	May 31	June 1	*	Much	M. F.3	None	398.	180.8	217.2	47.2	39.6	7.6	B.	1.8	16.6	10.	6.6	.04	.512	.192	.32	1.37	.471	.896	.04	1.28	8.	33.	24.	....	....
5176	June 7	" 8	+	Cons'd	M. F.1	"	274.	227.2	16.8	31.6	31.6	0.0	B.	2.	8.5	7.1	1.4	.064	.304	.208	.096	1.05	.762	.288	.085	2.	8.	26.5	27.	....	3,700
5259	" 21	" 22	§	"	M. F.3	"	518.8	314.4	204.4	80.8	39.6	41.2	B.	4.5	12.7	4.4	8.3	.048	.352	.16	.192	1.	.376	.624	.048	2.	6.	27.	32.	—	10,550
5349	July 5	July 6	§	"	M. F.01	"	440.	289.6	150.4	55.6	46.8	8.8	B.	5.7	9.6	4.5	5.1	.032	.192	.08	.112	.84	.218	.592	.022	1.2	....	27.	28.	—	9,900
5405	" 12	" 13	*	"	M. F.8	"	399.6	256.4	143.2	56.8	48.	8.8	B.	5.6	9.6	5.4	4.2	.02	.256	.208	.048	.856	.344	.512	.024	1.4	4.	27.	32.	....	....
5552	Aug. 3	Aug. 4	*	"	M. F.03	"	332.	292.4	39.6	48.4	39.2	9.2	B.	5.75	7.1	6.	1.1	.052	.288	.192	.096	.408	.28	.128	.012	.16	3.	26.	33.	+	19,700
5600	" 9	" 10	§	"	M. F.3	"	412.	248.4	163.6	62.	33.2	28.8	B.	5.2	10.2	5.9	4.3	.044	.32	.096	.224	.76	.392	.368	.036	.48	3.6	25.	29.	--	37,250
5649	" 16	" 17	*	"	M. F.04	"	387.2	279.2	108.	60.	49.2	10.8	Gh.	5.8	7.9	6.	1.9	.032	.256	.16	.096	.856	.408	.448	.03	.28	.5	26.	29.	....	....
5776	" 31	Sept. 1	§	"	M. F.04	"	386.1	285.6	100.8	58.8	37.2	21.6	B.	6.	8.5	4.1	4.4	.02	.256	.1	.156	1.	.296	.704	.002	1.	....	27.	27.		2,400
5858	Sept. 13	" 14	*	"	M. F.03	"	334.	289.2	44.8	28.	21.2	6.8	B.	5.15	5.8	3.	2.8	.016	.32	.12	.2	.76	.28	.48	.013	.28	Low	22.	21.	-	10,500
5911	" 20	" 21	§	"	M. F.03	"	366.8	262.	104.8	34.4	17.6	16.8	B.	5.3	7.3	3.3	4.	.012	.256	.092	.164	.696	.376	.32	.001	.24	"	19.	21.	+	45,500
5973	" 28	" 29	*	Much	M. F.02	"	266.4	266.4	0.0	33.2	28.8	4.4	G.	5.8	6.	4.7	1.3	.016	.256	.116	.11	.9	.228	.672	.002	.16	"	7.	16.	-	4,900
6009	Oct. 4	Oct. 5	*	Cons'd	M. F.03	"	331.1	262.4	72.	38.	22.4	15.6	B.	6.	5.7	3.7	2.	.024	.208	.112	.096	.484	.228	.256	.005	.16	"	6.	23.	-	1,950
6105	" 18	" 19	‡	Little	M. F.03	"	296.	245.6	50.4	22.1	17.2	5.2	B.	5.3	4.8	3.5	1.3	.024	.208	.124	.084	.68	.328	.352	.004	.12	"	12.	22.	+	4,900
6168	" 25	" 26	‡	Cons'd	M. F.02	"	322.4	260.8	61.6	13.2	12.	1.2	B.	6.	5.1	3.6	1.5	.012	.24	.084	.156	.584	.152	.132	.001	.16	"	18.5	27.	-	4,200
6213	Nov. 1	Nov. 2	‡	Little	M. F.03	"	330.	303.6	26.4	22.8	14.	8.8	G.	6.8	4.5	4.2	.3	.028	.208	.172	.036	.392	.328	.064	.012	.4	"	10.	8.	-	12,300
6259	" 8	" 9	+	"	M. F.03	"	323.6	302.8	20.8	48.8	22.4	26.4	B.	7.3	4.5	4.4	.1	.06	.256	.224	.032	.488	.392	.096	.009	.28	1.	10.	14.	-	2,400
6316	" 15	" 16	+	"	M. F.03	"	323.2	298.	25.2	30.8	28.	2.8	B.	6.5	4.	3.9	.1	.036	.128	.12	.008	.52	.36	.16	.005	.36	1.	12.	16.	..	4,300
6358	" 22	" 23	+	Cons'd	M. F.02	"	333.6	290.	43.6	19.6	16.4	3.2	G.	7.	5.9	4.2	1.7	.108	.208	.164	.044	.488	.36	.128	.022	.72	2.	13.	14.	+	11,200
6420	" 29	" 30	+	"	M. F.03	"	324.4	307.6	16.8	43.2	35.6	7.6	G.	6.5	3.8	3.5	.3	.048	.16	.148	.012	.328	.296	.032	.01	.6	1.	8.	14.	+	5,300
6470	Dec. 6	Dec. 8		Little	F.03	"	300.4	289.6	10.8	31.2	24.8	6.4	B.	5.95	2.9	2.9	0.0	.14	.128	.12	.008	.38	.296	.084	.207	.4	4.	3.	5.	-	2,300
6521	" 13	" 15		"	M. F.02	"	288	286.8	1.2	26.8	26.	.8	G.	6.6	4.2	4.2	0.0	.08	.208	.144	.064	.52	.296	.224	.01	.68	1.6	4.	1.	+	16,100
6561	" 20	" 22	+	"	M. F.03	"	355.2	276.4	78.8	46.	41.6	4.4	G.	7.1	9.7	6.5	3.2	.32	.352	.256	.096	.76	.124	.336	.015	.92	2.6	2.	4.	-	12,400

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray Brown.

TABLE 19.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, BEARDSTOWN, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue. Dissolved.	Residue. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5098	May 21	May 26	*	Cons'd	M. F.05	None	462.8	275.2	187.6	42.	22.4	19.6	B.	11.	12.2	10.3	1.9	.448	.384	.288	.096	1.29	.86	.43	.065	.2	10.9	....	27.	....	....
5143	June 1	June 2	*	Much	M. F.1	"	459.2	258.8	200.4	39.6	38.4	1.2	B.	7.5	13.6	10.2	3.4	.32	.48	.224	.256	1.21	.442	.768	.09	1.2	11.8	....	31.	....	....
5244	" 19	" 20	*	"	M. F.15	"	572.8	304.4	268.4	53.6	52.4	1.2	B.	11.	18.7	10.7	8.	.192	.768	.304	.464	1.16	.432	.728	.085	1.12	9.4	26.	27.	....	4,400
5354	July 6	July 7	*	Cons'd	M. F.06	"	421.2	309.2	112.	50.	44.8	5.2	B.	16.	12.2	8.2	4.	.32	.416	.256	.16	1.08	.712	.368	.15	.88	7.1	25.	26.5	—	2,570
5412	" 13	" 14	*	"	M. F.15	"	388.4	322.	66.4	32.8	32.	.8	B.	16.	11.	8.9	2.1	.704	.352	.272	.08	1.	.664	.336	.175	1.12	6.8	29.	34.	—	1,040
5460	" 20	" 21	*	"	M. F.06	"	429.2	340.8	88.4	50.	44.8	5.2	B.	28 25	12.5	10.8	1.7	.32	.448	.32	.128	1.32	.76	.56	.2	1.12	6.9	28.	31.	—	750
5516	" 27	" 28	*	"	M. F.06	"	373.2	315.2	58.	32.4	....	....	Gh.	34.	16.	11.7	4.3	.352	.32	.288	.032	1.24	.792	.448	.325	1.08	6.8	21.	27.	—	1,050
5566	Aug. 3	Aug. 4	*	Much	M. F.04	"	369.2	302.4	66.8	49.2	41.2	8.	B.	26.	11.2	9.8	1.4	.32	.352	.264	.088	1.08	.6	.48	.2	.92	6.4	25.5	31.	....	850
5613	" 10	" 11	*	Cons'd	M. F.04	"	345.2	266.8	78.4	44.8	16.	28.8	B.	26.	10.2	9.	1.2	.16	.32	.24	.08	.92	.632	.288	.18	.62	7.9	21.	27.	—	5,700
5666	" 17	" 18	†	"	M. F.15	"	309.2	186.8	122.4	41.6	38.8	2.8	B.	22.	10.	8.8	1.2	.448	.384	.32	.064	1.08	.648	.432	.1	.52	6.3	23.	27.	....	....
5716	" 24	" 26	*	Much	M. F.06	"	337.2	276.	61.2	49.6	23.6	26.	Gh.	21.	9.5	7.1	2.4	.416	.416	.204	.212	.92	.664	.256	.17	.6	6.2	21.	27.	+	25,000
5769	" 31	Sept. 1	*	Cons'd	M. F.08	"	346.	334.8	11.2	52.8	45.2	7.6	B.	28.	8.2	7.3	.9	.48	.32	.256	.064	.92	.648	.272	.12	.56	6.	20.	27.	+	9,600
5820	Sept. 7	" 8	†	"	M. F.04	"	349.6	320.	29.6	28.4	28.	.4	B.	29.	5.9	5.7	.2	.448	.516	.192	.324	1.16	712	.448	.05	.2	6.2	25.5	32.	+	3,960
5873	" 14	" 15	*	"	M. F.06	"	332.4	302.4	30.	36.	32.	4.	B.	25.4	8.8	6.2	2.6	.8	.384	.268	.116	1.	.808	.192	.05	.44	6.2	15.5	13.	—	965
5917	" 21	" 22	*	Much	M. F.15	"	338.	224.	114.	20.	17.2	2.8	B.	22.	9.6	6.6	3.	.528	.32	.272	.048	1.	.44	.56	.036	.44	7.	21.	16.	+	2,820
5975	" 28	" 29	*	Cons'd	M. F.03	"	335.6	304.8	30.8	39.2	36.8	2.4	B.	34.5	8.9	8.7	.2	.672	.384	.24	.144	.9	.596	.304	.06	.6	6.4	15.5	13.	+	4,410
6015	Oct. 5	Oct. 6	•	"	M. F.03	"	362.8	336.8	26.	34.	32.	2.	B.	40.	17.	9.2	7.8	.432	.448	.272	.176	.964	.676	.288	.05	.88	6.2	13.	16.	—	2,950
6066	" 12	" 13	*	"	M. F.03	"	374.8	312.4	32.4	18.8	17.2	1.6	B.	45.	9.5	7.3	2.2	.176	.432	.32	.112	.968	.484	.484	.05	.96	6.3	16.	20.	+	3,300
6121	" 19	" 20	†	"	M. F.1	"	364.4	313.2	51.2	18.8	15.6	3.2	GB.	42.	8.2	7.4	.8	.8	.4	.288	.112	1.	.52	.48	.08	.96	6.6	18.	14.	+	9,750
6184	" 26	" 27	*	"	M. F.04	"	384.8	351.6	33.2	19.6	6.	13.6	B.	48.8	8.	7.	1.	1.088	.416	.304	.112	.904	.616	.288	.17	1.4	6.5	19.	18.	+	4,000
6221	Nov. 2	Nov. 3	†	"	M. F.02	"	453.2	394.	59.2	14.4	....	....	B.	50.	8.7	8.1	.6	1.12	.432	.336	.096	1.032	.76	.272	.6	1.92	6.7	2.	0.	+	6,500
6261	" 9	" 10	†	"	M. F.04	"	420.	397.2	22.8	50.4	47.2	3.2	B.	50.5	9.3	7.8	1.5	.48	.656	.352	.304	1.32	.584	.736	.7	2.8	6.6	8.	6.	+	21,500
6325	" 16	" 17	*	"	M. F.04	"	393.2	361.2	32.	30.8	28.	2.8	B.	46.	8.5	7.2	1.3	1.92	.56	.304	.256	1.256	.616	.64	.2	2.2	6.8	12.	12.	+	7,150
6373	" 23	" 24	*	"	M. F.03	"	373.2	342.8	30.4	24.4	21.6	2.8	B.	40.5	8.2	7.4	.8	2.64	.432	.32	.112	.904	.68	.221	.07	1.6	7.2	10.	12.	...	35,200
6432	" 30	Dec. 1	†	"	M. F.02	"	380.	361.6	18.4	49.6	46.8	2.8	G.	40.5	7.4	6.7	.7	3.04	.432	.32	.112	.936	.616	.32	.05	1.12	6.6	6.5	6.	+	60,000
6488	Dec. 7	" 9	†	"	M. F.04	"	351.6	348.8	2.8	44.	42.4	1.6	B.	30.	19.	7.	12.	1.44	.528	.288	.24	1.48	.744	.736	.045	1.2	6.4	4.5	8.	+	29,000
6531	" 14	" 16	*	"	M. F.03	"	357.6	320.	37.6	40.	36.4	3.6	G.	27.	9.9	7.3	2.6	1.44	.608	.272	.336	1.24	.584	.656	.05	1.8	6.8	0.	—6.	+	191,500
6573	" 21	" 23	†	"	M. F.01	"	370.	347.2	22.8	28.	27.6	.4	G.	32.	12.2	9.3	2.9	1.68	.544	.368	.176	1.24	.776	.464	.06	1.48	7.1	0.	—3.	+	184,500
6597	" 28	" 29	†	"	M. F.04	"	364.4	362.4	2.	45.2	44.8	.4	G.	33.	11.3	9.8	1.5	2.64	.416	.304	.112	1.196	.936	.26	.07	1.18	7.	0.	—11.	....	48,400

TURBIDITY *Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 20.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—ILLINOIS RIVER, KAMPSVILLE, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ign'n: Tot'l	Loss on Ign'n: Dis solv'd	Loss on Ign'n: Sus pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis solv'd	Albuminoid Am.: Sus pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter
4986	May 2	May 3	*	Much	M. F.4	None	458.	272.8	185.2	57.2	30.8	26.4	B.	7.2	13.7	8.3	5.4	.08	.48	.248	.232	1.21	.63	.58	.075	.45	....	....	....	....	....
5010	" 9	" 10	*	Cons'd	M. F.05	"	496.8	280.8	216.	34 8	33.6	1.2	B.	8.3	13.1	8.3	4.8	.01	.18	.272	.208	1.21	.81	.4	.075	.84	....	....	....	....	....
5042	" 16	" 17	*	"	M. F.08	"	492.4	286.4	206.	23 6	18.8	6.8	B.	8.85	13.9	8.3	5.6	.224	.512	.32	.192	1.37	.666	.704	.1	1.	....	....	....	....	....
5075	" 23	" 24	*	"	M. F.03	"	490.	236.4	253.6	26.4	18.8	7.6	B.	6.5	14.	10.4	3.9	.288	.448	.192	.256	1.37	.666	.704	.038	.68	....	....	....	....	....
5125	" 31	June 1	*	V. M'ch	M. F.1	"	636.4	176.4	460.	48.1	24.8	23.6	B.	4.	20.5	7.5	13.	.128	.672	.224	.448	1.61	.81	.8	.045	.88	....	22.	18.	....	....
5177	June 7	" 8	*	Much	M. F.15	"	536.8	214 8	322.	32.8	25.2	7.6	B.	4.	15.4	8.8	6.6	.032	.48	.176	.304	1.53	.858	.672	.065	1.4	20.1	27.	27.	....	4.950
5212	" 14	" 15	*	"	M. F.15	"	548.	305 6	242.4	36.8	35.6	1.2	B.	9.	13.5	7.8	5.7	.112	.512	.288	.224	1.24	.664	.576	.032	1 6	18.5	25.	29.	....	6.200
5260	" 21	" 22	*	Cons'd	M. F.25	"	601.6	272.8	328.8	48.8	26.	22.8	B.	8 5	13.9	9.2	4.7	.048	.416	.304	.112	1.24	.76	.48	.034	1.2	17.1	26.	33.	....	96,500
5300	" 28	" 29	*	Little	M. F.06	"	369.6	285.6	84.	35.2	....	....	B.	10.	11.7	9.6	2.1	.024	.352	.288	.064	1.	.76	.24	.085	1.2	16.4	24.	28.	....	5.100
5347	July 5	July 6	*	Cons'd	M. F.02	"	361 2	294 4	66.8	48.4	43.2	5.2	B.	13.	11.1	9.4	1.7	.032	.192	.16	.032	1.	.792	.208	.14	1.36	16.9	27.	29.	+	11.350
5402	" 12	" 13	*	"	M. F.2	"	304.8	257.2	47.6	53.2	33.2	20.	B.	10.	9.7	8.9	.8	.064	.384	.224	.16	.84	.536	.304	.1	.92	13.9	29.	35	—	480
5445	" 19	" 20	+	Little	M. F.1	"	310.4	285.2	25.2	47.2	42.	5.2	Gh.	16 3	11.6	10.6	1.	.01	.32	.224	.096	.92	.724	.196	.056	1.2	16.	29.	33	—	460
5493	" 26	" 27	+	Cons'd	M. F.07	"	344.4	324.4	20.	33 6	32.	1 6	Gh.	30.	9.6	9.5	.1	.064	.32	.256	.064	.92	.728	.192	.19	.4	15.9	28.	33	+	355
5541	Aug. 2	Aug. 3	+	Little	M. F.25	"	316.	278 4	37.6	46.8	46.	.8	Gh.	22.	10.5	10.3	.2	.024	.24	.192	.048	.696	.6	.096	.1	1.42	15.9	28.	37.	+	3.300
5611	" 11	" 12	*	Much	M. F.05	"	372.8	147.2	225.6	44.	22.8	21.2	B.	7.9	11.	7.6	3.4	.16	.288	.132	.156	.84	.488	.352	.065	.48	16.5	27.	31.	+	17.400
5643	" 16	" 17	+	Little	M. F.2	"	263.6	244.	19.6	62.8	56.	6.8	G.	16.5	9.3	8.5	.8	.08	.304	.176	.128	1.	.456	.544	.1	.8	15.7	28.	28.	...	....
5703	" 23	" 24	+	Cons'd	M.	"	328 8	270.8	58.	40.	39.2	.8	G.	18.	8.5	8.	.5	.056	.352	.212	.14	.88	.632	.248	.07	.72	15 5	29	32.		2.650
5746	" 30	" 31	+	"	M. F.03	"	341.2	272.8	68.4	64.	37.6	26.4	G.	18.	11.5	9.1	2.4	.04	.1	.192	.208	1.24	.552	.688	.1	.68	15.2	29.	32.		1.550
5802	Sept. 6	Sept. 7	+	"	M. F.05	"	309.6	283 6	26.	41.2	40.4	.8	B.	20.	8 4	5.8	2.6	.144	.336	.256	.08	1.	.792	.208	.01	.32	15.1	29.	32.	....	345
5850	" 13	" 14	*	"	M. F.04	"	316.4	312.	34.4	31.	25.2	8.8	B.	22.3	8.5	6.	2.5	.24	.352	.304	.018	.81	.6	.24	.06	.48	15.3	22.	20.	+	1.550
5900	" 20	" 21	*	"	M. F.04	"	311.6	222.	89.6	21.2	21.2	0 0	B.	16.5	8.7	6.9	1.8	.36	.352	.224	.128	1	.172	.528	.01	.68	15.6	19.	18.	+	11.025
5961	" 27	" 28	+	Little	M. F.06	"	305.2	270.1	34.8	20 4	20.4	0 0	B.	26.4	8.2	7.5	.7	.3	.336	.272	.064	.82	.58	.24	.03	.6	15.3	17	18.	...	1,000
6000	Oct. 4	Oct. 5	+	"	M. F.03	"	286.	264.	22.	36.	36.	0.0	GB.	25.7	9 5	8 7	.8	.324	.32	.288	.032	.676	.628	.048	.03	.48	15.3	16	19.		825
6051	" 11	" 12	+	"	M F.04	"	327.2	308.8	18.4	27.2	26 4	.8	B.	32.	8 9	7 1	1.8	.164	.288	.272	.016	.804	.392	.412	.024	.64	15.2	17	22.		3.800
6098	" 18	" 19	+	"	M. F.07	"	330 4	321.6	8.8	27.2	25.2	2	G.	37.5	8.2	8.	.2	.16	.368	.272	.096	1.08	.776	.304	.02	.56	15.5	17.	14.	+	1.145
6167	" 25	" 26	*	Cons'd	M. F.04	"	344.	309.2	34.8	19.6	17.2	2.4	G.	37.1	7.	6.9	.1	.296	.352	.24	.112	.872	.584	.288	.035	1.08	15.4	17.5	23.	+	1.400
6214	Nov. 1	Nov. 3	*	"	M. F.04	"	370 4	336.	34.4	21.6	....	...	G.	38.6	7 3	7 1	.2	.552	.4	.268	.132	.744	.52	.224	.045	1.	15 6	12.	9.		4.800
6255	" 8	" 9	‡	"	M. F.05	"	365.6	362.8	2.8	30.	28.8	1.2	B	41.	7.1	6 6	.5	.512	.336	.24	.096	.744	.616	.128	.12	1.68	15.6	10	12.		1.025
6314	" 15	"	...	....	....	.....	.....	.....	.....	....	....	....	.....	.....	....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	....	15.7	12.	15.		1.450
6345	" 22	" 23	+	Cons'd	M. F.03	None	373.6	325.2	48.4	28.8	24.4	4 4	G.	34.5	8.	6 4	1.6	.688	.752	.288	.464	1.64	.704	.936	.05	.16	16.	12.	13.	+	14.200
6411	" 29	" 30	+	"	M. F.02	"	342.4	316.8	25.6	34.4	31.6	2 8	B.	32.	6.9	6.8	.1	1 44	.368	.272	.096	.936	.584	.352	.046	1.32	15 7	11.	12.		6.850
6463	Dec. 6	Dec. 7	+	"	M. F.03	"	344.8	342.4	2.4	37.6	37.2	.4	B.	34.	8 6	5.7	2.9	1.184	.56	.24	.32	1.384	.776	.608	.04	1.76	15.6	5.5	9.		5.900
6516	" 13	" 14	*	"	M. F.06	"	341.6	321.6	20.	37.6	35 6	2.	G.	26.	9.9	7.2	2.7	.368	.752	.208	.544	1.48	.584	.896	.035	1.8	15.8	4	—1.	+	10,650
6572	" 20	" 22	*	"	M. F.04	"	324.8	292.	32 8	31.	32.	2.	G.	19.8	10 5	7.4	3.1	.672	.48	.256	.224	1.	.552	.448	.04	1.08	16.	2	3.		70,000

TURBIDITY—*Decided. §Very Decided. + Distinct. ‡ Very Slight. Slight.
COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray Brown.

TABLE 21.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, GRAFTON, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Chicago.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5005	May 3	May 5	†	Cons'd	M. F.03	None	329.3	266.4	62.9	42.	39.2	2.8	B.	7.8	10.2	7.2	3.	.096	.44	.272	.168	1.21	.53	.68	.052	1.05	....	....	......	....	....
5024	" 10	" 12	†	"	M. F.04	"	323.2	258.	65.2	25.6	20.8	4.8	B.	7.1	9.9	9.14	.76	.128	.352	.288	.064	.89	.7	.19	.08	.72	....	....	......	....	....
5059	" 17	" 19	*	"	M. F.04	"	350.4	300.4	50.	42.8	38.2	4.6	B.	9.	10.	8.8	1.2	.08	.32	.288	.032	.89	.73	.16	.02	1.08	....	....	......	....	....
5090	" 24	" 26	*	"	M. F.04	"	369.6	245.2	124.4	38.	33.6	4.4	B.	7.	12.4	11.	1.1	.352	.48	.384	.096	.97	.7	.27	.07	1.72	17.5	....	......	....	....
5092	" 24	" 26	*	"	M. F.4	"	332.	231.6	100.4	28.8	25.6	3.2	B.	7.15	7.	6.6	.4	.384	.416	.288	.128	.89	.76	.13	.06	1.56	17.5	....	......	....	....
5135	" 31	June 1	*	Much	M. F.4	"	674.8	174.	500.8	51.2	21.4	29.8	B.	3.59	16.8	7.9	8.9	.08	.576	.288	.288	1.53	.57	.96	.042	.52	16.1	21.	26.	....	....
5185	June 7	" 9	*	"	M. F.7	"	442.4	263.2	179.2	45.2	42.4	2.8	B.	4.5	9.4	8.6	.8	.008	.4	.224	.176	1.37	.666	.704	.011	.96	16.7	22.	30.	....	2,600
5222	" 14	" 16	*	"	M. F.2	"	368.	254.4	113.6	25.2	24.	1.2	B.	8.	12.7	9.	3.7	.128	.512	.288	.224	1.	.856	.144	.007	1.4	14.1	26.	29.	....	4,000
5262	" 21	" 23	*	Cons'd	M. F.3	"	313.6	276.4	57.2	24.	23.2	.8	B.	7.	11.2	8.9	2.3	.096	.352	.176	.176	.92	.6	.32	.019	1.24	....	26.	31.	....	9,100
5323	" 28	" 30	*	"	M. F.05	"	300.8	300.	.8	19.6	....	....	B.	9.4	9.5	9.2	.3	.04	.224	.192	.032	.68	.6	.08	.033	.96	....	28.	31.	....	920
5351	July 5	July 6	†	Little	M. F.02	"	284.	218.	66.	44.	....	....	B.	10.7	10.8	9.3	1.5	.06	.32	.256	.064	.92	.61	.28	.054	1.2	14.6	29.	28.	—	560
5411	" 12	" 14	†	"	F.1	"	316.8	274.4	42.4	34.4	27.2	7.2	B.	10.4	8.9	7.8	1.1	.176	.352	.256	.096	.76	.568	.192	.165	.96	13.2	29.	32.	—	9,750
5453	" 19	" 20	†	"	M. F.04	"	503.6	286.4	217.2	86.8	48.	38.8	B.	12.9	10.4	9.4	1.	.04	.32	.304	.016	.92	.696	.224	.08	1.04	9.7	33.	36.	—	70
5498	" 26	" 27	†	"	M. F.1	"	343.2	314.8	28.4	50.8	46.	4.8	B.	22.2	12.	9.9	2.1	.052	.384	.256	.128	1.	.728	.272	.1	.84	7.6	34.	37.	—	135
5543	Aug. 2	Aug. 3	†	"	M. F.25	"	348.4	314.4	34.	59.2	52.4	6.8	Gh.	32.	10.2	9.7	.5	.024	.272	.224	.048	.792	.68	.112	.096	1.2	6.1	33.	37.	—	760
5598	" 9	" 10	†	"	M. F.04	"	374.	187.2	186.8	54.	34.4	19.6	B.	15.	11.3	8.1	3.2	.01	.256	.112	.144	1.08	.36	.72	.07	.72	7.6	25.	28.	+	4,550
5642	" 16	" 17	*	"	M. F.15	"	282.8	178.8	104.	75.6	47.6	28.	B.	6.9	11.9	9.3	2.6	.04	.368	.24	.128	1.08	.504	.576	.07	.64	6.	26.	29.	....	....
5696	" 21	" 24	†	"	M. F.05	"	308.8	273.2	35.6	44.	43.2	.8	Gh.	16.75	9.1	7.1	2.	.024	.384	.224	.16	.92	.544	.376	.05	.6	4.2	31.	31.	—	1,215
5747	" 30	" 31	†	"	M. F.03	"	297.2	256.	41.2	28.	27.6	.4	Gh.	14.	10.	9.	1.	.014	.288	.176	.112	.92	.488	.432	.05	.52	3.3	30.	31.	—	700
5805	Sept. 6	Sept. 7	†	"	M. F.01	"	324.4	294.	30.4	36.	33.2	2.8	B.	19.75	9.1	5.9	3.2	.081	.4	.272	.128	1.08	.76	.32	.05	.4	3.4	35.	34.	—	410
5852	" 13	" 14	*	"	M. F.04	"	320.	296.4	23.6	37.6	34.	3.6	B.	19.2	7.9	6.	1.9	.24	.352	.24	.112	.84	.552	.288	.05	.52	4.4	24.	22.	—	620
5902	" 20	" 21	*	"	M. F.03	"	344.8	287.2	57.6	24.4	24.	.4	B.	22.35	8.4	6.8	1.6	.18	.288	.224	.064	.84	.536	.304	.045	.6	4.8	20.	19.	+	1,720
5959	" 27	" 28	†	"	M. F.06	"	290.	256.	34.	23.6	17.6	6.	GB.	22.45	8.6	7.3	1.3	.396	.272	.256	.016	.82	.58	.24	.01	1.	4.1	19.	20.	—	425
6001	Oct. 4	Oct. 5	†	"	M. F.05	"	266.8	226.6	40.2	36.8	30.8	6.	GB.	19.3	9.1	8.3	.8	.192	.336	.272	.064	.708	.612	.096	.018	.48	....	18.	20.	—	750
6045	" 11	" 12	†	"	M. F.4	"	331.6	300.4	31.2	33.2	13.6	19.6	B.	28.9	8.3	8.	.3	.172	.32	.24	.08	.98	.628	.352	.023	.72	3.2	17.	21.	—	520
6166	" 25	" 26	*	Cons'd	M. F.03	"	320.8	282.	38.8	32.8	29.6	3.2	B.	28.	7.4	6.9	.5	.084	.368	.224	.144	.84	.472	.368	.022	.8	2.7	19.	24.	+	960
6205	Nov. 1	Nov. 2	*	"	M. F.15	"	340.	257.6	82.4	22.8	17.6	5.2	B.	26.3	8.2	7.4	.8	.404	.368	.256	.112	.648	.52	.128	.03	1.12	3.4	18.	10.	—	20,000
6257	" 8	" 9	†	Little	M. F.06	"	362.	334.4	27.6	40.4	32.	8.4	B.	36.6	7.8	6.5	1.3	.48	.32	.272	.048	.84	.44	.4	.06	1.48	5.4	9.	17.	+	1,210
6317	" 22	" 23	*	Cons'd	M. F.02	"	385.2	329.2	56.	29.6	27.2	2.4	B.	32.5	9.	7.2	1.8	.16	.752	.224	.528	1.8	.68	1.12	.05	1.6	6.	13.	17.	?	8,300
6412	" 29	" 30	†	"	M. F.02	"	339.2	306.	33.2	33.6	30.4	3.2	B.	27.	8.	6.6	1.4	.88	.352	.304	.048	1.064	.68	.384	.045	1.68	5.9	8.	12.	+	5,640
6162	Dec. 6	Dec. 7	†	"	M. F.03	"	342.	328.	14.	25.6	25.2	.4	B.	31.5	9.4	4.7	4.7	1.12	.512	.224	.288	1.256	.744	.512	.036	1.68	4.3	3.	6.	+	1,125
6519	" 13	" 14	*	"	M. F.07	"	346.4	315.6	30.8	45.2	36.4	8.8	G.	24.	10.6	6.4	4.2	.176	.704	.24	.464	1.64	.456	1.184	.025	1.68	4.3	3.	0.	+	9,250
6559	" 20	" 22	†	"	M. F.02	"	364.8	299.2	65.6	33.6	31.6	2.	G.	22.25	11.7	7.7	4.	.432	.672	.24	.432	1.16	.618	.512	.03	1.68	4.4	2.	6.	+	28,000
6585	" 27	" 28	*	"	M. F.03	"	329.2	282.	47.2	27.2	18.	9.2	G.	20.2	12.7	8.8	3.9	.88	.512	.224	.288	1.08	.616	.464	.026	1.68	2.1	0.	—1.	....	122,000

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 22.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, GRAFTON, ILL.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Residue on Evaporation: Loss on Ig'n. Tot'l	Loss on Ig'n. Dis. solv'd	Loss on Ig'n. Sus. pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis. solv'd	Albuminoid Am.: Sus. pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5004	May 3	May 6	*	Much	M. F.30	None	891.2	130.4	760.8	17.1	6.7	10.4	B.	2.	26.9	8.4	18.5	.01	.96	.208	.752	1.85	.49	1.36	.02	.65	14.8	....	......	....	....
5025	" 10	" 13	*	"	M. F.15	"	348.	127.6	220.4	28.	22.	6.	B.	.69	14.6	10.6	4.0	.036	.416	.256	.16	1.13	.474	.656	.035	.4	....	....	......	....	....
5060	" 17	" 18	*	"	M. F.05	"	287 6	133.6	154.	27.2	16.4	10.8	B.	2.4	18.4	13.8	4.6	.06	.448	.256	.192	1.13	.794	.336	.006	.28	....	....	......	....	....
5091	" 24	" 26	§	V.M'ch	VM.F.3	"	1097.6	138.8	958.8	50.8	24.4	26.4	B.	2.	26.5	13.4	13.1	.184	1.12	.288	.832	2.65	.7	1.95	.05	.16	17.5	....	......	....	....
5136	" 31	June 1	§	"	M. F.3	"	844.	147.6	696.4	61.6	26.	35.6	B.	2.	24.8	10.9	13.9	.052	.832	.192	.64	2.01	.762	1.248	.016	.52	16.1	23.	26.	....	....
5186	June 7	" 9	§	"	M. F.6	"	705 2	155.6	549.6	68.4	34.	34.4	B.	1.5	25.5	12.1	13.4	.012	.88	.24	.64	2.65	.57	2.08	.007	.6	16.7	23.	30.	....	5,500
5221	" 14	" 16	§	"	M. F.6	"	521.6	181.2	340.4	29.2	21.6	7.6	B.	1.5	23 4	13.5	9.9	.044	.672	.256	.416	1.64	.856	.784	.002	.56	14.1	24.	29.	....	6,000
5261	" 21	" 23	§	Cons'd	M. F.5	"	403.6	113.2	290.4	32.	19.6	12.4	B.	1.5	20.4	13.1	7.3	.028	.512	.256	.256	1.4	.6	.8	.004	.52	....	27.	31.	....	6,900
5322	" 28	" 30	§	"	M. F.5	"	395.6	140.4	255.2	24.8	22.	2.8	B.	1.	19.3	14.6	4.7	.024	.48	.192	.288	1.08	.52	.56	.002	.48	....	26.5	31.	....	1,670
5350	July 5	July 6	‡	Little	M. F.15	"	286.	122.8	163.2	21.2	20.4	.8	B.	1.15	17.7	14.6	3.1	.036	.4	.224	.176	1.	.728	.272	.004	.36	14.6	26.	28.	—	1,030
5410	" 12	" 14	*	Cons'd	M. F.5	"	172.4	159.6	12.8	15.6	15.2	.4	B.	1.3	24.6	12.5	12.1	.024	.576	.256	.32	1.4	.664	.736	.002	.6	13.2	27.	32.	+	1,000
5454	" 19	" 20	*	"	M. F.3	"	282.8	161.2	121.6	52.4	42.4	10.	B.	2 2	16.3	13.3	3.	.04	.416	.24	.176	1.	.568	.432	.02	.32	9.7	28.	36.	+	1,165
5497	" 26	" 27	*	"	M. F.08	"	267 6	165.2	102.4	55.2	45.6	9.6	Gh.	2.2	15.2	13.2	2.	.048	.416	.224	.192	.92	.376	.544	.01	.4	7.6	30.	37.	+	465
5542	Aug. 2	Aug. 3	+	Little	M. F.25	"	224.	158.	66.	46.	36.	10.	Gh.	2.4	14.9	12.3	2.6	.024	.32	.176	.144	.76	.536	.224	.001	.2	6.1	28.	37.	—	1,450
5597	" 9	" 10	+	Cons'd	M. F.04	"	438.	163.6	274.4	55.6	41.2	14.4	B.	2.6	15 2	11.1	4.1	.036	.416	.16	.256	1.32	.328	.992	.005	.12	7.6	26.	28.	+	2,823
5641	" 16	" 17	*	"	M. F.15	"	305 2	152.8	152.4	66.4	48.	18.4	B.	2.7	13.9	10.4	3.5	.036	.432	.176	.256	1.32	.....	.....	.011	.28	6.	27.	29.	....	....
5697	" 23	" 24	+	"	M F.05	"	265.2	178.	87.2	41.2	34.	7.2	B.	3.1	11 2	7.8	3.4	.012	.336	.192	.144	1.	.44	.56	.004	.16	4.2	26.	31.	—	910
5748	" 30	" 31	+	Little	M F.02	"	244.4	182.8	61.6	38.8	36.4	2.4	B.	3.5	10.9	9.9	1.	.032	.272	.176	.096	.92	.424	.496	.002	.12	3.3	28.	31.	—	1,200
5804	Sept 6	Sept. 7	+	Cons'd	M. F.03	"	246 4	170.8	75.6	31.6	28.8	2.8	B.	3.5	10.6	6.	4.6	.036	.32	.16	.16	1.	.44	.56	.05	.2	3.4	30.	36.	—	530
5851	" 13	" 14	*	"	M. F.04	"	270.4	156.	114.4	29.2	14.4	14.8	B.	2.45	11.8	6.8	5.	.04	.384	.208	.176	.92	.552	.368	.007	.2	4.4	23.	22.	—	2,835
5901	" 20	" 21	*	"	M. F.04	"	265.6	162.8	102.8	35.2	33.6	1.6	B.	2 3	13.	8 6	4.4	.016	.432	.144	.288	1.08	.328	.752	.01	.32	4.8	20.	19.	—	4,500
5960	" 27	" 28	*	"	M. F.15	"	234.8	141.6	93.2	32.4	21.6	10.8	B.	2.8	13.5	11.9	1.6	.014	.416	.244	.172	.98	.484	.496	.005	.16	4.1	18.	20.	—	1,560
6002	Oct. 4	Oct. 5	*	"	M. F.07	"	206.8	148.8	58.	32.	25.2	6.8	B.	6.8	16.6	15.3	1.3	.032	.4	.224	.176	.868	.372	.496	.005	.2	....	16.	20.	—	2,170
6044	" 11	" 12	+	"	M. F.15	"	228.	163.6	64.4	27 6	24.8	2.8	B.	2.8	13 7	13.6	.1	.016	.416	.208	.208	.74	.404	.336	.003	.2	3.2	16.	21.	—	2,550
6165	" 25	" 26	*	"	M. F.05	"	230.8	154.4	76.4	25.6	15.6	10.	B.	3.6	9.8	8.7	1.1	.02	.416	.18	.236	.76	.296	.464	.005	.12	2.7	18.	24.	+	2,500
6204	Nov. 1	Nov. 2	*	"	M. F.04	"	232.4	162.	70.4	14.8	12.	2.8	B.	3.7	8.9	8.6	.3	.028	.384	.16	.224	.68	.36	.32	.006	.16	3 4	16.5	10.	+	8,700
6256	" 8	" 9	+	"	M. F.08	"	244.4	173.6	70.8	30.	22.	8.	B.	2.8	10 2	9.2	1.	.028	.32	.24	.08	.84	.44	.4	.005	.24	5.4	9.	17.	+	4,550
6305	" 15	" 16	*	"	M. F.03	"	303.2	169.2	134.	20.8	17.2	3.6	B.	2.5	12.5	12.5	0.0	.088	.368	.32	.048	.68	.424	.256	.006	.2	6.2	10.	14.	+	3,600
6346	" 22	" 23	*	"	M. F.3	"	241.2	150.8	90.4	38.8	33.2	5.6	B.	3.2	12.7	12.3	.4	.064	.4	.224	.176	.84	.52	.32	.006	.16	6.	12.	17.		18,000
6413	" 29	....	..	....	....	.....	178.8	156.8	22.	37 6	27.2	10.4	B.	3.1	12.	11.6	.4	.096	.336	.272	.064	.936	.52	.416	.006	.16	5.9	3.	12.	+	7,050
6461	Dec. 6	Dec. 7	+	Cons'd	M. F.15	None	170.8	146.	24.8	28.8	20.8	8.	B.	3.	14.4	13.5	.9	.048	.32	.208	.112	.84	.68	.16	.006	.32	4.3	3.	6.	+	1,250
6520	" 13	" 14	*	"	M. F.13	"	157.2	134.8	22.4	23.6	22.	1.6	B.	3.7	12.5	11.8	.7	.001	.352	.224	.128	.744	.52	.224	.005	.12	4.3	3.	0.	+	2,500
6560	" 20	" 22	‡	"	M F.10	"	169.6	147 2	22.4	23.2	19.6	3.6	B.	3.6	12.1	11.9	.2	.032	.32	.208	.112	.6	.296	.304	.006	.16	4.4	1.	6.	+	7,300

TURBIDITY—*Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 23.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL.
University of Illinois.

SOURCE OF WATER — MISSISSIPPI RIVER. 100 FEET FROM ILLINOIS SHORE, ALTON, ILL.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Susp'd	Color on Ignition.	Chlorine.
5000	May 3	May 4	*	Much	M. F.1	None	590.8	191.2	399.6	46.	33.2	12.8	B.	4.5
5018	" 10	" 11	*	Cons'd	M. F.25	"	483.6	205.6	278.	44.6	18.4	26.2	B.	4.87
5057	" 18	" 19	*	Much	M. F.2	"	509.6	229.2	280.4	34.8	26.4	8.4	B.	5.4
5086	" 24	" 25	*	"	M. F.08	"	720.	182.8	537.2	38.8	32.8	6.	B.	3.7
5126	" 31	June 1	*	"	M. F.50	"	884.8	170.4	714.4	45.6	26.8	18.8	B.	3.6
5180	June 8	" 9	*	"	M. F.30	"	680.8	193.6	487.2	42.	28.8	13.2	B.	3.8
5217	" 15	" 16	*	"	M. F.25	"	475.2	238.8	236.4	30.4	26 8	3.6	B.	6.9
5263	" 22	" 23	*	"	M. F.30	"	373.6	216.8	156.8	28.	22.4	5.6	B.	5.1
5304	" 28	" 29	*	Cons'd	M. F.5	"	349.6	180.4	169.2	23.2	22.8	.4	B.	3.4
5341	July 5	July 6	*	"	M. F.5	"	282.8	165.6	117.2	48.8	36.4	12.4	B.	3.9
5396	" 12	" 13	*	"	M. F.4	"	331.6	188.8	142.8	56.8	48.8	8.	B.	4.3
5448	" 19	" 20	*	"	M. F.1	"	269.6	189 6	80.	25.6	20.	5.6	B.	5.6
5499	" 26	" 27	*	"	M. F.15	"	309.2	226 4	82.8	57.6	42.4	15.2	B.	10.8
5550	Aug. 2	Aug. 3	*	"	M. F.3	"	300.8	238.4	62.4	40.	39.6	.4	B.	17.4
5592	" 9	" 10	†	"	M. F.03	"	614.	224 8	389.2	60.8	39.6	21.2	B.	13.
5648	" 16	" 17	*	"	M. F.3	"	302.8	158.8	144.	64.8	38.	26.8	B.	5.75
5698	" 23	" 24	†	"	M. F.05	"	251.2	192.4	58.8	40.4	36.8	3.6	B.	6.5
5750	" 30	" 31	†	"	M. F.04	"	256.8	211.2	45.6	39.2	24.	15.2	B.	6.3
5806	Sept. 6	Sept. 7	†	"	M. F.04	"	242.4	189.2	53.2	24.8	17.6	7.2	B.	6.
5857	" 13	" 14	*	"	M. F.06	"	260.8	184.8	76.	36.4	32.4	4.	B.	5.8
5907	" 20	" 21	*	"	M. F.04	"	294.4	206.8	87.6	36.8	30.	6.8	B.	9.9
5958	" 27	" 28	*	"	M. F.06	"	227.2	173.6	53.6	34.	2.8	31.2	B.	7.3
6003	Oct. 4	Oct. 5	*	"	M. F.07	"	221.2	158.8	62.4	36.	22.8	13.2	B.	6.6
6050	" 11	" 12	*	"	M. F.15	"	231.2	170.8	60.4	12.	9.2	2.8	B.	7.
6095	" 18	" 19	*	"	M. F.08	"	230.	207.2	22.8	12.8	12.	.8	B.	11.4
6160	" 25	" 26	*	"	M. F.04	"	231.	179.6	54.4	24.	18.	6.	B.	9.2
6210	Nov. 1	Nov. 2	*	"	M. F.08	"	276.4	194.4	82.	20.4	10.8	9.6	B.	11.2
6248	" 8	" 9	†	"	M. F.06	"	279.2	214.8	64.4	24.	17.6	6.4	B.	15.3
6311	" 15	" 16	*	"	M. F.15	"	244.	184.4	59.6	26.8	25.6	1.2	B.	11.7
6348	" 22	" 23	*	"	M. F.25	"	272.8	217.2	55.6	23.6	14.8	8.8	B.	15.8
6414	" 29	" 30	†	"	M. F.3	"	233.6	202.	31.6	19.2	16.4	2.8	B.	12.1
6451	Dec. 6	Dec. 7	†	"	M. F.04	"	224.4	207.6	16.8	14.	12.8	1.2	B.	11.2
6510	" 13	" 14	*	"	M. F.10	"	224.	206.8	17.2	22.	20.8	1.2	B.	11.3
6553	" 20	" 21	†	"	M. F.03	"	253.6	216.	37.6	32.	24.8	7.2	......	11.7

Serial No.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Susp'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5000	17.2	9.1	8.1	.022	.76	.288	.472	1.61	.49	1.12	.042	.6	....	....	......	....	....
5018	15.	8.4	6.6	.06	.512	.256	.256	1.21	.742	.468	.04	.6	....	....	......	....	....
5057	19.5	12.1	7.4	.068	.512	.288	.224	1.53	.794	.736	.015	.56	...	....	......	....	....
5086	24.	12.7	11.3	.12	.88	.24	.64	1.85	.57	1.28	.006	.84	17.5	18.	16.	....	....
5126	20.	8.9	11.1	.044	.8	.224	.576	2.09	.506	1.584	.033	.72	16.5	21.	20.	....	....
5180	19.8	10.3	9.5	.008	.48	.24	.24	1.85	.73	1.12	.006	1.2	16.1	18.	16.	....	3,400
5217	15.5	8.6	6.9	.036	.544	.208	.336	1.24	.696	.544	.005	1.36	17.	19.	20.	....	1,350
5263	14.9	10.3	4.6	.016	.512	.192	.32	1.08	.664	.416	.008	.84	14.4	19.	21.	....	4,000
5304	15.7	11.7	4.	.02	.448	.224	.224	1.32	.44	.88	.006	.52	13.5	27.	22.	....	1,080
5341	16.8	13.8	3.	.02	.384	.24	.144	1.08	.564	.516	.017	.56	15.3	26.	27.	....	1,895
5396	15.4	12.4	3.	.05	.448	.256	.192	1.24	.504	.736	.02	.48	15.8	29.	28.	....	2,300
5448	13.6	11.6	2.	.032	.448	.288	.16	.92	.536	.384	.025	.44	12.2	28.	31.	....	415
5499	12.6	11.3	1.3	.04	.352	.272	.08	.92	.568	.352	.022	.72	9.	30.	34.	....	360
5550	12.4	11.9	.5	.028	.304	.208	.096	.824	.664	.16	.04	.72	7.2	29.	32.	+	2,050
5592	16.	9.7	6.3	.036	.48	.208	.272	1.32	.488	.832	.065	.88	7.	26.	28.	+	5,407
5648	12.2	9.	3.2	.028	.32	.192	.128	1.16	.408	.752	.05	.6	7.2	26.	30.	....	....
5698	10.2	7.2	3.	.016	.32	.192	.128	.84	.632	.208	.013	.32	4.3	28.	32.	–	2,500
5750	10.	8.9	1.1	.052	.32	.192	.128	.84	.424	.416	.013	.32	3.1	28.	28.	....	....
5806	9.6	6.	3.6	.056	.304	.208	.096	.92	.536	.384	.008	.2	2.9	30.	29.	–	1,700
5857	10.9	6.3	4.6	.024	.384	.232	.152	.84	.408	.432	.008	.36	3.6	24.	22.	+	3,050
5907	11.	7.	4.	.032	.384	.176	.208	.84	.376	.461	.014	.36	4.	20.	20.	+	7,200
5958	11.4	10.2	1.2	.01	.352	.256	.096	.9	.532	.368	.01	.28	3.8	18.	19.	–	2,500
6003	13.3	12.3	1.	.032	.384	.24	.144	.804	.472	.332	.008	.2	2.8	15.	16.	–	1,900
6050	11.6	11.3	.3	.016	.4	.24	.16	.664	.472	.192	.008	.2	2.2	16.	17.	+	2,450
6095	9.7	9.6	.1	.028	.352	.24	.112	.92	.424	.496	.005	.28	2.1	18.	20.	+	4,700
6160	9.5	8.1	1.4	.044	.432	.352	.08	.92	.536	.384	.009	.2	1.9	18.	19.	+	2,050
6210	8.9	8.	.9	.084	.368	.256	.112	.712	.564	.148	.016	.52	2.3	12.	10.	?	21,200
6248	10.	9.4	.6	.096	.336	.24	.096	.904	.552	.352	.016	.48	3.9	9.	12.	+	2,000
6311	11.3	9.5	1.8	.064	.56	.288	.272	1.032	.584	.448	.03	.36	5.4	10.	13.	—	4,200
6348	11.9	10.8	1.1	.06	.64	.24	.4	1.384	.68	.704	.025	.8	4.7	13.	14.	—	10,000
6414	10.6	10.2	.4	.398	.352	.208	.144	.968	.584	.384	.02	.72	3.8	8.	12.	+	10,600
6451	11.8	11.1	.7	.224	.448	.32	.128	.872	.552	.32	.015	.8	3.1	8.	8.	—	2,250
6510	12.	9.9	2.1	.084	.448	.272	.176	1.064	.552	.512	.013	.6	3.	4.	1.	+	4,200
6553	11.2	9.9	1.3	.1	.48	.224	.256	1.32	.52	.8	.018	.8	3.	0.	0.	+	64,800

TURBIDITY —*Decided. §Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.

COLOR —M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 24.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, ONE-FOURTH DISTANCE FROM ILLINOIS SHORE, ALTON, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4999	May 3	May 4	*	Much	M. F.04	None	638.8	154.	484.8	48.	26.8	21.2	B.	3.4	18.2	8.5	9.7	.008	.76	.208	.552	1.53	.49	1.04	.032	.5	....	....	......	....	....
5017	" 10	" 11	§	Cons'd	M. F.1	"	401 4	134.4	270.	40.4	20.	20.4	B.	1.43	18.3	10.4	7.9	.068	.544	.256	.288	1.29	.54	.75	.02	.36	....	....	......	....	....
5056	" 18	" 19	*	Much	M. F.3	"	569.6	243.6	326.	36.8	27.6	9.2	B.	4.	21.9	13.	8.9	.076	.608	.224	.384	1.69	.646	1.044	.023	.6	....	....	......	....	....
5085	" 24	" 25	§	"	M. F.04	"	847.6	164.	683.6	52.	33.2	18.8	B.	2.51	25 9	13.2	12.7	.092	.96	.24	.72	2.17	.6	1.57	.047	.84	17.5	16.	16.	....	....
5129	" 31	June 1	*	"	M. F.30	"	948.	224.8	723.2	70.8	62.	8.8	B.	3.05	21.7	11.5	10.2	.032	.832	.32	.512	2.25	.826	1.424	.032	.72	16.5	21.	20.	....	....
5181	June 8	" 9	*	"	M. F.60	"	624.	181.6	442.4	45.6	35.6	10.	B.	1.8	24.5	11.6	12.9	.016	.727	.208	.519	2.01	.57	1.44	.007	.72	16.4	18.	16.	....	1,950
5216	" 15	" 16	§	"	M. F.50	"	470.	196.8	273.2	32.	19.6	12.4	B.	3.4	19.2	7.7	11.5	.032	.576	.208	.368	1.72	.728	.992	.002	1.	17.	19.	20.	....	3,200
5264	" 22	" 23	§	Cons'd	M. F.50	"	348.8	168.	180 8	21.	11.2	12.8	B.	2.	19.2	13.4	5.8	.02	.524	.24	.284	1.24	.504	.736	.004	.48	14.4	19.	21.	....	10,550
5305	" 28	" 29	*	"	M. F.7	"	338.	154.4	183.6	12.8	12.	.8	B.	1.64	17.4	12.5	4.9	.012	.448	.256	.192	1.46	.472	.688	.003	.44	13.5	27.	32.	....	8,650
5342	July 5	July 6	§	"	M. F.60	"	262.8	114.8	118.	16.4	38.4	8.	B.	1.8	18.2	16.5	1.7	.016	.352	.272	.08	1.08	.664	.416	.005	.4	15.3	26.	27.	....	1,270
5397	" 12	" 13	*	"	M. F.4	"	413 6	158.	285.6	75.2	50.	25.2	B.	2.	21.1	14 6	6.5	.02	.512	.272	.24	1.32	.44	.88	.002	.44	15.8	29	28.	....	1,120
5419	" 19	" 20	*	"	M. F.2	"	236.8	159.6	77.2	28.	24.	4.	B.	2.6	15.	12.4	2.6	.06	.416	.256	.16	.84	.472	.368	.015	.28	12.2	28.	31.	....	419
5500	" 26	" 27	*	"	M. F.15	"	278.8	192.1	86.4	18.4	43.2	5.2	B.	5.5	13.9	11.5	2.4	.036	.384	.192	.192	.84	.6	.24	.01	.48	9.	30.	34.	....	430
5549	Aug. 2	Aug. 3	*	"	M. F.3	"	232.	183.6	48 4	30.	29.6	.4	B.	6.6	13.	12.2	.8	.036	.272	.192	.08	.76	.472	.288	.028	.2	7.2	29.	32.	+	1,750
5593	" 9	" 10	†	"	M. F.04	"	422.1	196.8	225.6	56.8	44.4	12.4	B.	8.4	14.	10.2	3.8	.052	.352	.208	.144	1.16	.488	.672	.044	.44	7.	26.	28.	+	2,920
5647	" 16	" 17	*	"	M. F.25	"	207.6	116.4	151.2	53.2	38.8	14.4	B.	3.4	13.4	10.8	2.3	.036	.384	.224	.16	1.24	.456	.784	.023	.62	7.2	26.	30.	....	....
5699	" 23	" 24	+	"	M. F.03	"	252.	197.2	51.8	38.8	37.6	1.2	B.	5.7	10.3	7.5	2.8	.016	.368	.176	.192	1.	.472	.528	.01	.2	4.3	28.	32.	—	2,250
5751	" 30	" 31	†	"	M. F.06	"	250.	190.4	59.6	31.2	30 8	.4	B.	5.7	10.6	9.3	1.3	.04	.32	.16	.16	.92	.456	.464	.011	.28	3.1	28.	28.	+	2,500
5807	Sept. 6	Sept. 7	†	"	M. F.02	"	210.8	184.4	56.4	20.4	15.2	5.2	B.	5.55	9.9	6.2	3.7	.018	.288	.224	.064	1.08	.552	.528	.005	.4	2.9	30.	29.	—	1,750
5856	" 13	" 14	*	"	M. F.05	"	260.	172.4	87.6	26.	15.2	10.8	B.	5.5	11.	6.7	4.3	.028	.352	.216	.136	.81	.392	.448	.008	.2	3.6	24.	22.	+	3,200
5906	" 20	" 21	*	"	M. F.04	"	283.2	189.2	94.	29.2	20.	9.2	B.	7.75	11.7	7.	4.7	.036	.432	.16	.272	1.16	.504	.656	.012	.28	4.	20.	20.	—	5,250
5957	" 27	" 28	*	"	M. F.07	"	233.	160.1	72.6	27.6	27.2	.4	B.	5.6	12.3	11.2	1.1	.016	.4	.292	.108	.82	.5	.32	.007	.2	3.8	18.	19.	—	1,800
6001	Oct. 4	Oct. 5	*	"	M. F.06	"	212.4	158.	51 1	26.	25.6	.4	B.	5.2	13.5	12.3	1.2	.04	.448	.24	.208	.964	.472	.492	.008	.16	2.8	15.	16.	-	2,300
6049	" 11	" 12	*	"	M. F.10	"	229 2	174.4	54 8	16.8	12.4	4.4	B.	6.8	13.1	11.5	1.6	.02	.4	.224	.176	.74	.472	.268	.007	.36	2.2	16.	17.	+	1,600
6094	" 18	" 19	*	"	M. F.08	"	250.8	185.2	65.6	15.6	12.4	3.2	B.	10.	9.7	8 9	.8	.024	.384	.24	.144	1.	.424	.576	.005	.2	2.1	18.	20.	—	2,400
6161	" 25	" 26	*	"	M. F.04	"	243.6	174.	69.6	25.2	20.	5.2	B.	8.2	9.7	8.	1.7	.011	.416	.24	.176	.714	.312	.432	.008	.2	1.9	18.	19.	+	2,150
6209	Nov. 1	Nov. 2	*	"	M. F.08	"	268.8	187.6	81.2	34.	9.6	24.4	B.	9 5	9.	7.7	1.3	.068	.368	.24	.128	.616	.44	.176	.013	.48	2.3	12.	10.	+	16,000
6249	" 8	" 9	†	"	M. F.05	"	254.	197.6	56 4	31.2	24.	7.2	B.	8.3	9.6	8.8	.8	.076	.352	.288	.064	.936	.456	.48	.013	.36	3.9	9.	12.	—	3,800
6310	" 15	" 16	*	"	M. F.4	"	230.	164.8	65.2	26.	25 4	.6	B.	7.8	12.1	10.3	1.8	.104	.48	.272	.208	.84	.584	.256	.022	.36	5.4	10.	13.	+	1,950
6349	" 22	" 23	*	"	M. F.3	"	234.4	178.4	56.	18.8	14.8	4.	B.	10 6	12.1	11.5	.6	.048	.544	.208	.336	.968	.616	.352	.02	.52	4.7	13.	11.	+	7,000
6415	" 29	" 30	†	"	M. F.3	"	223.2	189.6	33.6	27.2	16.8	10.4	B.	10.6	10.1	10.	.1	.28	.352	.208	.144	.904	.584	.32	.022	.48	3.8	8.	12.	+	9,400
6450	Dec. 6	Dec. 7	+	"	M. F.03	"	215.6	192.4	23.2	28.	26.	2.	B.	8.7	11.8	11.4	.4	.18	.432	.272	.16	1.064	.616	.418	.014	.44	3 1	8.	8.	-	1,700
6512	" 13	" 14	*	"	M. F.15	"	220.4	172.4	48.	21.6	19.2	2.4	B.	9.8	12.9	11 6	1.3	.072	.48	.192	.288	1.032	.552	.48	.008	.56	3.	4.	1.	+	3,500
6554	" 20	" 21	†	"	M. F.03	"	224.8	190.4	34.1	25.2	20.4	4.8	B.	14.3	14.7	10.7	1.	.052	.48	.208	.272	1.08	.488	.592	.015	.16	3.	0.	0.	+	62,400

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.   COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 25.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION

SOURCE OF WATER—MISSISSIPPI RIVER. MIDSTREAM, ALTON, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Dissolved.	Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	By Dissolved.	By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Dissolved.	Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water. C.	Temperature of Air. Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4998	May 3	May 4	*	Much	M. F.3	None	769.2	136.4	632.8	66.	22.4	43.6	B.	1.4	18.4	8.7	9.7	.008	.92	.224	.696	1.85	.45	1.4	.034	.45	....	....	....	....	....
5016	" 10	" 11	*	Cons'd	M. F.3	"	474.	157.2	316.8	46.	38.1	7.9	B.	.95	16.8	8.8	8.	.04	.64	.256	.381	1.45	.51	.91	.016	.52	....	....	....	....	....
5055	" 18	" 19	*	Much	M. F.4	"	737.2	153.2	584.	46.4	20.8	25.6	B.	2.3	24.8	14.4	10.4	.06	.96	.32	.64	1.85	.6	1.25	.023	.18	....	....	....	....	....
5084	" 24	" 25	*	"	M. F.06	"	1172.4	146.8	1025.6	72.8	30.	42.8	B.	.74	26.2	12.5	13.7	.068	1.04	.256	.784	2.65	.54	2.11	.017	.92	17.5	18.	16.	....	....
5128	" 31	June 1	*	"	M.	"	1247.6	165.2	1082.4	78.8	26.	52.8	B.	.4	26.	12.6	13.4	.044	1.072	.256	.816	2.41	.471	1.936	.019	.56	16.5	21.	20.	....	....
5182	June 8	" 9	*	"	M. F.60	"	769.6	167.2	602.4	54.8	34.1	20.7	B.	.3	24.2	12.8	11.4	.016	.8	.208	.592	2.65	.57	2.08	.007	.72	16.1	18.	16.	....	6.200
5215	" 15	" 16	*	"	M. F.25	"	481.6	162.4	319.2	33.2	27.2	6.	B.	1.2	19.7	10.7	9.	.028	.64	.224	.416	1.88	.536	1.344	.002	.52	17.	19.	20.	....	1,500
5265	" 22	" 23	*	Cons'd	M. F.40	"	470.8	158.8	312.	21.6	20.	1.6	B.	1.5	21.8	13.6	8.2	.032	.576	.192	.384	1.48	.632	.848	.005	.48	14.4	19.	21.	....	8.700
5306	" 28	" 29	*	"	M. F.7	"	415.2	149.2	266.	18.4	12.8	5.6	B.	.9	19.6	12.6	7.	.032	.48	.208	.272	1.24	.16	1.08	.004	.4	13.5	27.	32.	....	6.700
5343	July 5	July 6	*	"	M. F.7	"	302.8	140.	162.8	52.8	33.2	19.6	B.	1.3	17.	10.8	6.2	.028	.416	.224	.192	1.08	.568	.512	.006	.36	15.3	26.	27.	....	1.150
5398	" 12	" 13	*	"	M. F.7	"	554.4	164.8	389.6	74.	48.8	25.2	B.	2.1	22.8	14.2	8.6	.072	.576	.224	.352	1.64	.568	1.072	.005	.56	15.8	29.	28.	....	6.050
5450	" 19	" 20	*	"	M. F.2	"	295.6	161.2	134.4	44.8	39.6	5.2	B.	2.6	16.	12.4	3.6	.034	.448	.224	.224	.92	.408	.512	.007	.32	12.2	28.	31.	....	615
5501	" 26	" 27	*	"	M. F.2	"	298.4	167.2	131.2	53.2	44.8	8.4	B.	2.4	15.1	12.2	2.9	.028	.416	.256	.16	1.08	.488	.592	.001	.4	9.	30.	34.	....	270
5548	Aug. 2	Aug. 3	*	"	M. F.3	"	228.	176.2	51.8	54.8	50.4	4.4	B.	1.2	13.6	12.	1.6	.024	.288	.176	.112	.728	.568	.16	.008	.12	7.2	29.	32.	—	3.300
5594	" 9	" 10	‡	"	M. F.03	"	288.4	167.6	120.8	46.	36.8	9.2	B.	3.6	13.1	10.9	2.2	.044	.352	.176	.176	1.08	.408	.672	.01	.44	7.	26.	28.	+	1.363
5646	" 16	" 17	*	"	M. F.3	"	309.6	140.8	168.8	46.4	40.4	6.	B.	2.8	13.3	10.6	2.7	.024	.384	.176	.208	1.16	.456	.704	.017	.28	7.2	26.	30.	....	....
5700	" 23	" 24	†	"	M.	"	241.6	150.4	81.2	28.4	24.8	3.6	B.	3.7	10.7	8.	2.7	.012	.352	.172	.18	1.	.44	.56	.005	.16	4.3	28.	32.	—	3.200
5752	" 30	" 31	†	"	M. F.02	"	256.4	183.6	72.8	35.6	33.2	2.4	B.	4.45	10.8	9.3	1.5	.056	.288	.16	.128	.92	.44	.48	.008	.2	3.1	28.	28.	—	2.000
5808	Sept. 6	Sept. 7	†	"	M. F.02	"	241.2	175.2	66.	20.8	20.4	.4	B.	4.3	9.9	6.	3.9	.04	.288	.144	.144	.76	.392	.368	.003	.2	2.9	30.	29.	—	1.650
5855	" 13	" 14	*	"	M. F.04	"	262.	161.2	100.8	36.8	21.2	15.6	B.	3.6	11.3	6.3	5.	.018	.416	.184	.232	.92	.376	.544	.006	.2	3.6	21.	22.	+	1.900
5905	" 20	" 21	*	"	M. F.04	"	272.4	174.8	97.6	28.4	20.	8.4	B.	5.75	12.	7.	5.	.016	.32	.144	.176	.92	.472	.448	.009	.28	4.	20.	20.	—	5.950
5956	" 27	" 28	*	"	M. F.08	"	233.2	149.2	84.	27.2	26.	1.2	B.	3.8	13.	11.5	1.5	.034	.432	.244	.188	.9	.532	.368	.001	.16	3.8	18.	19.	....	2,400
6005	Oct. 4	Oct. 5	*	"	M. F.06	"	212.	151.6	60.4	36.4	15.2	21.2	B.	4.4	13.7	12.7	1.	.048	.384	.224	.16	1.06	.42	.64	.007	.12	2.8	15.	16.	—	2,350
6048	" 11	" 12	*	"	M. F.15	"	220.8	174.6	46.2	22.8	22.	.8	B.	5.1	12.4	12.1	.3	.02	.432	.176	.256	.74	.404	.336	.007	.16	2.2	16.	17.	—	2,700
6093	" 18	" 19	*	"	M. F.1	"	240.8	174.	66.8	19.2	12.	7.2	B.	8.8	11.1	9.2	1.9	.01	.352	.208	.144	.84	.448	.392	.007	.2	2.1	18.	20.	—	2,350
6162	" 25	" 26	*	"	M. F.05	"	228.	166.4	61.6	25.6	13.6	12.	B.	6.3	9.5	8.2	1.3	.024	.4	.224	.176	.84	.36	.48	.008	.2	1.9	18.	19.	+	2.300
6208	Nov. 1	Nov. 2	*	"	M. F.1	"	225.6	184.	41.6	26.	7.2	18.8	B.	7.7	9.1	7.3	1.8	.06	.384	.144	.24	.872	.408	.464	.01	.44	2.3	12.	10.	+	10.050
6250	" 8	" 9	*	"	M. F.1	"	256.8	201.6	55.2	29.2	26.8	2.4	B.	4.2	12.5	9.9	2.6	.028	.384	.304	.08	.84	.424	.416	.008	.2	3.9	9.	12.	—	3.500
6309	" 15	" 16	*	"	M. F.4	"	222.	147.6	74.4	30.4	26.4	4.	B.	3.2	12.2	11.	1.2	.092	.416	.32	.096	.808	.584	.224	.007	.28	5.4	10.	13.	+	3.450
6350	" 22	" 23	*	"	M. F.3	"	204.8	150.4	54.4	32.4	24.4	8.	B.	5.3	11.8	11.	.8	.044	.448	.224	.224	.808	.488	.32	.007	.28	4.7	13.	14.	+	9.600
6416	" 29	" 30	†	"	M. F.25	"	195.2	176.	19.2	33.6	26.8	6.8	B.	7.3	10.5	10.4	.1	.116	.32	.24	.08	.808	.552	.256	.012	.28	3.8	8.	12.	+	9.200
6452	Dec. 6	Dec. 7	†	"	M. F.03	"	205.6	176.	29.6	18.8	18.	.8	B.	6.8	12.5	11.6	.9	.08	.432	.32	.112	.968	.68	.288	.012	.52	3.1	8.	8.	+	2,200
6513	" 13	" 14	*	"	M. F.15	"	193.6	190.	3.6	38.8	37.2	1.6	B.	6.6	11.8	9.8	2.	.04	.464	.208	.256	.904	.584	.32	.008	.24	3.	4.	1.	—	2.500
6555	" 20	" 21	†	"	M. F.04	"	228.8	181.6	47.2	37.2	35.6	1.6	B.	7.7	14.6	11.4	3.2	.052	.416	.172	.244	1.	.488	.512	.009	.14	3.	0.	0.	+	50,200

TURBIDITY—*Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.   COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 26.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, ONE-FOURTH DISTANCE FROM MISSOURI SHORE. ALTON, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Dis-solved.	Sus-pended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Igni-tion.	Chlorine.	Oxygen Consumed: Total.	By Dis-solved.	By Suspd Matter.	Nitrogen as Ammonia: Free Am-monia.	Albuminoid Am.: Tot'l	Dis-solv'd	Sus-pnd'd	Organic Nitrogen: Total.	Dis-solved.	Sus-pended.	Nitrogen as: Nitrites.	Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4997	May 3	May 4	*	Much	M. F.3	None	879.2	133.6	745.6	43.6	26.4	17.2	B.	1.4	17.3	8.3	9.	.005	.96	.208	.752	2.09	.49	1.6	.034	.5	....	....	....	....	....
5015	" 10	" 11	§	Cons'd	M. F.15	"	614.	162.8	451.2	44.	38.4	5.6	B.	.95	19.2	9.8	9.4	.056	.64	.224	.416	1.85	.634	1.216	.012	.44	....	....	....	....	....
5054	" 18	" 19	§	Much	M. F.4	"	958.	146.	812.	50.4	13.2	37.2	B.	1.8	26.	14.	12.	.044	1.184	.288	.896	2.17	.6	1.57	.016	.56	....	....	....	....	....
5083	" 24	" 25	*	"	M. F.6	"	1285.6	150.	1135.6	84.8	30.8	54.	B.	.54	27.7	13.8	13.9	.084	1.12	.304	.816	2.73	.666	2.064	.01	.96	17.5	18.	16.	....	....
5127	" 31	June 1	*	"	M. F.50	"	1262.4	139.2	1123.2	84.4	27.6	56.8	B.	.4	18.6	11.4	7.2	.068	1.152	.16	.992	2.73	.442	2.288	.02	.56	16.5	21.	20.	....	....
5183	June 8	" 9	*	"	M. F.60	"	947.2	151.6	795.6	64.8	22.4	42.4	B.	1.2	22.	11.2	10.8	.008	1.12	.24	.88	2.81	.826	1.984	.008	.72	16.1	18.	16.	....	5,000
5214	" 15	" 16	*	"	M. F.40	"	473.6	141.6	332.	29.6	24.	5.6	B.	1.3	19.1	10.8	8.3	.04	.672	.24	.432	1.56	.792	.768	.002	.8	17.	19.	20.	....	2,250
5266	" 22	" 23	*	Cons'd	M. F.60	"	578.4	160.4	418.	36.4	25.6	10.8	B.	1.4	23.2	12.8	10.4	.036	.576	.288	.288	1.56	.6	.96	.007	.44	14.4	19.	21.	....	9,000
5307	" 28	" 29	*	"	M. F.8	"	449.2	164.	285.2	18.4	8.8	9.6	B.	1.3	18.7	12.7	6.	.024	.512	.208	.304	1.4	.504	.896	.003	.44	13.5	27.	32.	....	6,650
5344	July 5	July 6	*	"	M. F.8	"	356.8	142.8	214.	52.4	36.8	15.6	B.	1.9	18.8	14.8	4.	.016	.416	.256	.16	2.12	.728	1.392	.004	.52	15.3	26.	27.	....	2,090
5390	" 12	" 13	*	"	M. F.3	"	560.4	154.4	406.	83.2	47.2	36.	B.	2.2	23.8	13.2	10.6	.032	.64	.24	.4	1.656	.44	1.216	.004	.6	15.8	29.	28.	....	3,325
5451	" 19	" 20	*	"	M. F.3	"	324.8	166.8	158.	51.6	41.6	10.	B.	2.2	16.1	12.4	3.7	.036	.48	.256	.224	1.16	.504	.656	.006	.36	12.2	28.	31.	....	340
5502	" 26	" 27	*	"	M. F.2	"	303.2	192.8	110.4	60.8	30.	30.8	B.	2.2	14.9	12.1	2.8	.024	.384	.176	.208	1.	.504	.496	.004	.4	9.	30.	34.	....	1,260
5547	Aug 2	Aug. 3	*	"	M. F.3	"	228.4	168.4	60.	55.2	52.4	2.8	B.	1.2	13.2	12.	1.2	.02	.256	.192	.064	.76	.504	.256	.002	.12	7.2	29.	32.	—	3,950
5595	" 9	" 10	*	"	M. F.04	"	266.8	163.6	103.2	44.	35.6	8.4	B.	3.	13.	11.3	1.7	.036	.288	.176	.112	.84	.376	.464	.003	.4	7.	26.	28.	+	1,340
5645	" 16	" 17	*	"	M. F.25	"	301.2	134.	167.2	46.	36.8	9.2	B.	2.5	13.6	10.2	3.4	.036	.4	.144	.256	1.24	.408	.832	.02	.44	7.2	26.	30.	+	6,900
5701	" 23	" 24	+	"	M.	"	233.6	163.2	70.4	38.8	32.4	6.4	Gh.	3.2	11.	8.2	2.8	.016	.368	.204	.161	1.	.341	.656	.003	.2	4.3	28.	32.	—	4,200
5753	" 30	" 31	+	"	M. F.03	"	235.2	179.2	56.	32.4	30.4	2.	Gh.	3.6	10.5	9.3	1.2	.048	.24	.176	.064	.84	.421	.416	.001	.24	3.1	28.	28.	—	1,100
5809	Sept. 6	Sept. 7	†	"	M. F.04	"	230.	165.6	64.4	33.6	21.2	12.1	B.	3.6	9.9	6.2	3.7	.032	.288	.176	.112	.76	.28	.48	.001	.16	2.9	30.	29.	—	1,000
5854	" 13	" 14	*	"	M. F.04	"	252.4	164.8	87.6	36.4	27.6	8.8	B.	2.5	11.	6.6	4.4	.028	.384	.172	.212	.92	.456	.464	.005	.2	3.6	24.	22.	....	1,460
5904	" 20	" 21	*	"	M. F.03	"	264.8	161.2	103.6	32.	28.	4.	B.	3.1	12.4	8.3	4.1	.012	.352	.16	.192	1.08	.218	.832	.01	.2	4.	20.	20.	+	5,100
5955	" 27	" 28	*	"	M. F.07	"	220.	145.2	74.8	28.4	28.	.4	B.	2.8	13.1	12.3	.8	.044	.4	.304	.096	.82	.516	.304	.005	.2	3.8	18.	19.	—	2,560
6006	Oct. 4	Oct. 5	*	"	M. F.07	"	213.6	147.6	66.	26.8	24.4	2.4	B.	3.2	13.2	11.2	2.	.048	.416	.272	.144	.836	.472	.364	.005	.08	2.8	15.	16.	+	2,300
6047	" 11	" 12	*	"	M. F.15	"	210.8	163.6	47.2	22.4	21.2	1.2	B.	3.7	14.3	11.	3.3	.02	.448	.192	.256	1.06	.324	.736	.005	.2	2.2	16.	17.	+	3,600
6092	" 18	" 19	*	"	M. F.06	"	228.8	156.4	72.4	21.2	16.8	4.4	B.	4.9	11.6	9.7	1.9	.052	.384	.176	.208	1.	.36	.64	.005	.2	2.1	18.	20.	—	1,450
6163	" 25	" 26	*	"	M. F.06	"	205.6	160.	45.6	24.	16.	8.	B.	4.3	9.6	8.6	1.	.016	.384	.208	.176	.581	.36	.224	.006	.12	1.9	18.	19.	—	2,150
6207	Nov. 1	Nov. 2	*	"	M. F.08	"	244.4	174.4	70.	21.2	7.2	14.	B.	4.5	9.2	8.4	.8	.028	.4	.144	.256	.68	.392	.288	.007	.28	2.3	12.	10.	—	8,300
6251	" 8	" 9	+	"	M. F.06	"	233.2	173.6	59.6	31.6	31.2	.4	B.	3.4	12.9	9.3	3.6	.028	.352	.24	.112	.936	.36	.576	.006	.2	3.9	9.	10.	+	3,600
6308	" 15	" 16	*	"	M. F.3	"	225.2	143.2	82.	34.	23.2	10.8	B.	2.5	12.5	11.2	1.3	.004	.368	.272	.096	.744	.552	.192	.005	.2	5.1	10.	13.	—	4,650
6351	" 22	" 23	*	"	M. F.3	"	191.6	143.2	48.4	25.2	17.6	7.6	B.	3.3	12.8	12.1	.7	.026	.432	.24	.192	.808	.52	.288	.005	.12	4.7	13.	14.	+	6,400
6417	" 29	" 30	†	"	M. F.3	"	182.8	157.	25.8	32.	24.4	7.6	B.	3.8	11.4	11.	.4	.02	.32	.182	.138	.68	.424	.256	.008	.12	3.8	8.	12.	—	9,000
6453	Dec. 6	Dec. 7	+	"	M. F.03	"	176.4	161.6	14.8	36.	23.6	12.4	B.	4.7	12.3	11.9	.4	.016	.4	.32	.08	.968	.616	.352	.011	.44	3.1	8.	8.	+	1,050
6514	" 13	" 14	*	"	M. F.15	"	172.	155.6	16.4	32.	24.	8.	B.	4.	12.6	11.5	1.1	.028	.336	.24	.096	.84	.456	.384	.006	.12	3.	4	1.	+	2,200
6556	" 20	" 21	†	"	M. F.04	"	191.2	162.	29.2	30.	28.4	1.6	B.	5.4	11.9	11.4	.5	.032	.336	.176	.16	.92	.456	.461	.007	.16	3.	0.	0.	+	22,000

TURBIDITY—*Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red, Rh., Reddish. W., White. Gh., Grayish, Blk., Black. GB., Gray Brown.

TABLE 27.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 FEET FROM MISSOURI SHORE, ALTON, ILL.

Report of ARTHUR W. PALMER,
T. J. BURRILL.
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4996	May 3	May 4	*	Much	M. F.3	None	801.2	136.4	664.8	50.8	29.2	21.6	B.	1.6	18.5	8.4	10.1	.01	.92	.304	.616	2.03	.41	1.62	.038	.5	....	....	......	....	....
5014	" 10	" 11	*	Cons'd	M. F.06	"	697.6	150.	547.6	26.4	24.4	2.	B.	.8	21.3	10.1	11.2	.056	.736	.256	.48	1.85	.666	1.184	.04	.48	....	....	......	....	....
5053	" 18	" 19	*	Much	M. F.4	"	862.4	146.8	715.6	38.8	26.8	12.	B.	1.4	26.	13.5	12.5	.096	1.024	.256	.768	2.11	.474	1.636	.014	.52	....	....	......	....	....
5082	" 24	" 25	§	V.M'ch	M. F.5	"	1064.4	147.6	916.8	72.	29.2	42.8	B.	.8	27.1	14.1	13.	.1	1.04	.256	.784	2.41	.7	1.71	.021	1.08	17.5	18.	16.	....	....
5130	" 31	June 1	*	"	M. F.30	"	1412.8	153.2	1259.6	93.2	49.6	43.6	B.	.36	24.7	11.9	12.8	.032	1.312	.224	1.088	2.73	.73	2.	.021	.56	16.5	21.	20.	....	....
5184	June 8	" 9	*	Much	M. F.70	"	1006.	170.4	835.6	78.4	35.2	43.2	B.	.5	26.1	13.4	12.7	.024	.96	.288	.672	2.65	.826	1.824	.007	.48	16.1	18.	16.	....	2,850
5213	" 15	" 16	*	"	M. F.40	"	462.8	169.2	293.6	24.	20.	4.	B.	1.6	18.4	10.8	7.6	.036	.608	.224	.384	1.8	.76	1.04	.003	.72	17.	19.	20.	....	3,300
5267	" 22	" 23	*	Cons'd	M. F.50	"	500.	168.8	331.2	35.6	32.	3.6	B.	1.6	21.4	12.7	8.7	.04	.64	.248	.392	1.64	.632	1.008	.007	.36	14.4	19.	21.	....	13,600
5308	" 28	" 29	*	"	M. F.60	"	433.2	150.4	282.8	37.2	26.4	10.8	B.	1.6	19.8	12.	7.8	.02	.552	.208	.344	1.32	.472	.848	.005	.4	13.5	27.	32.	....	9,250
5345	July 5	July 6	*	"	M. F.8	"	412.8	142.8	270.	62.8	34.8	28.	B.	2.	19.	14.6	4.4	.02	.48	.24	.24	2.04	.536	1.504	.004	.36	15.3	26.	27.	....	2,700
5400	" 12	" 13	*	"	M. F.6	"	618.8	161.6	437.2	88.4	46.4	42.	B.	2.15	22.8	13.2	9.6	.032	.544	.24	.304	1.464	.472	.992	.002	.6	15.8	29.	28.	....	6,000
5452	" 19	" 20	*	"	M. F.6	"	289.2	179.2	110.	53.2	44.4	8.8	B.	2.6	15.4	11.6	3.8	.032	.32	.208	.112	.84	.472	.368	.006	.36	12.2	28.	31.	....	510
5503	" 26	" 27	*	"	M. F.2	"	287.2	158.8	128.4	51.2	39.6	11.6	B.	2.2	14.4	11.5	2.9	.02	.384	.224	.16	.92	.408	.512	.005	.4	9.	30.	34.	...	2,500
5546	Aug. 2	Aug. 3	*	"	M. F.3	"	229.6	164.8	64.8	54.	45.2	8.8	B.	2.6	13.2	11.2	2.	.016	.272	.224	.048	.64	.536	.104	.004	.2	7.2	29.	32.	—	3,400
5596	" 9	" 10	†	"	M. F.04	"	293.6	165.6	128.	64.	38.	26.	B.	3.1	13.4	11.5	1.9	.024	.288	.192	.096	.84	.44	.4	.003	.2	7.	26.	28.	+	1,400
5614	" 16	" 17	*	"	M. F.3	"	326.	138.8	187.2	63.2	40.8	22.4	Gh.	2.8	13.7	10.5	3.2	.02	.384	.192	.192	1.16	.492	.668	.023	.4	7.2	26.	30.	....	....
5702	" 23	" 24	†	"	M.	"	217.2	183.2	34.	74.	55.6	18.4	Gh.	3.45	11.	8.2	2.8	.016	.4	.24	.16	1.08	.312	.768	.004	.16	4.3	28.	32.	—	2,250
5754	" 30	" 31	†	"	M. F.03	"	230.8	176.8	54.	40.	38.4	1.6	Gh.	3.4	10.5	9.6	.9	.036	.272	.18	.092	.92	.328	.592	.001	.28	3.1	28.	28.	—	1,800
5810	Sept. 6	Sept. 7	†	"	M. F.03	"	228.8	171.6	57.2	26.4	24.4	2.	B.	3.8	9.5	6.1	3.4	.032	288	.128	.16	.76	.392	.368	.001	.12	2.9	30.	29.	—	1,400
5853	" 13	" 14	*	"	M. F.06	"	222.4	165.2	57.2	28.4	17.2	11.2	B.	2.6	9.6	6.3	3.3	.028	.352	.176	.176	.84	.408	.432	.007	.24	3.6	24.	22.	—	2,300
5903	" 20	" 21	..	....	....	......	......	.....	......	.....	....	....	......	.....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	....	4.	20.	20.	+	9,500
5954	" 27	" 28	*	Cons'd	M. F.06	None	216.4	141.6	74.8	37.2	32.	5.2	B.	3.1	12.5	11.8	.7	.012	.4	.264	.136	.82	.5	.32	.003	.12	3.8	18.	19.	?	1,050
6007	Oct. 4	Oct. 5	*	"	M. F.07	"	204.	146.8	57.2	31.2	23.6	7.6	B.	3.5	12.4	11.8	.6	.032	.368	.272	.096	.74	.372	.368	.004	.08	2.8	15.	16.	—	2,050
6046	" 11	" 12	*	"	M. F.15	"	214.8	162.8	52.	12.	11.6	.4	B.	3.3	12.9	12.8	.1	.02	.432	.24	.192	.772	.404	.368	.005	.08	2.2	16.	17.	—	2,300
6091	" 18	" 19	*	"	M. F.06	"	213.6	161.2	52.4	19.6	12.4	7.2	B.	4.2	11.5	9.7	1.8	.044	.352	.192	.16	.92	.36	.56	.007	.16	2.1	18.	20.	—	2,600
6164	" 25	" 26	*	"	M. F.06	"	209.2	153.6	55.6	19.6	14.8	4.8	B.	4.	9.9	8.6	1.3	.02	.4	.208	.192	.76	.376	.384	.005	.16	1.9	18.	19.	—	1,850
6206	Nov. 1	Nov. 2	*	"	M. F.07	"	228.8	179.2	49.6	17.2	12.	5.2	B.	4.4	9.	8.2	.8	.028	.352	.192	.16	.648	.392	256	.007	.2	2.3	12.	10.	—	8,100
6252	" 8	" 9	†	"	M. F.06	"	205.2	162.	43.2	16.	14.4	1.6	B.	3.2	12.	9.5	2.5	.04	.432	.192	.24	.904	.424	.48	.007	.2	3.9	9.	12.	+	3,100
6307	" 15	" 16	*	"	M. F.5	"	212.4	145.2	67.2	26.	17.2	8.8	B.	2.6	12.2	10.9	1.3	.04	.384	.304	.08	.68	.52	.16	.007	.28	5.4	10.	13.	—	4,500
6352	" 22	" 23	*	"	M.	"	186.	144.4	41.6	14.4	11.2	3.2	B.	3.4	12.8	12.1	.7	.032	.368	.32	.048	.68	.552	.128	.007	.16	4.7	13.	14.	—	6,000
6418	" 29	" 30	†	"	M. F.25	"	168.8	162.4	6.4	25.6	22.8	2.8	B.	3.5	10.8	10.8	....	.016	.304	.192	.112	.68	.456	.224	.008	.12	3.8	8.	12.	—	6,950
6454	Dec. 6	Dec. 7	†	"	M. F.01	"	189.6	168.4	21.2	38.4	38.	.4	B.	3.6	12.9	11.9	1.	.02	.384	.32	.064	.808	.712	.096	.006	.48	3.1	8.	8.	+	1,400
6515	" 13	" 14	*	"	M. F.20	"	181.6	150.4	31.2	18.8	16.8	2.	B.	3.4	11.8	10.8	1.	.036	.352	.192	.16	.904	.488	.416	.007	.24	3.	4.	1.	+	1,550
6557	" 20	" 21	†	"	M. F.05	"	168.	153.2	14.8	31.6	30.4	1.2	B.	4.6	14.4	11.5	2.9	.036	.368	.176	.192	1.	.424	.576	.008	.16	3.	0.	0.	+	9,600

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 28.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL.
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 FEET FROM ILLINOIS SHORE, AT CHAIN OF ROCKS. PUMPING STATION, ST. LOUIS WATER WORKS.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	By Dissolved.	By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4977	April 28	April 29	§	V. M'ch	VM.F.03	None	2656.4	208.8	2447.6	84.	21.2	62.8	B.	4.	30.5	8.1	22.4	.044	1.04	.16	.88	2.49	.314	2.176	.029	.55	....	....	....	....	....
5029	May 12	May 13	§	"	VM.F.06	"	1455.6	203.6	1252.	44.4	31.6	12.8	B.	4.2	22.7	9.	13.7	.044	.88	.192	.688	1.93	.314	1.616	.022	.4	....	....	....	....	....
5101	" 25	" 26	§	"	VM.F.3	"	886.4	122.8	763.6	37.2	2.	35.2	B.	2.4	23.8	11.9	11.9	.06	.88	.224	.656	2.33	.666	1.664	.035	.84	25.	....	....	....	....
5142	June 1	June 2	§	"	VM.F.1	"	801.2	182.6	618.6	61.6	28.8	32.8	B.	3.2	21.9	10.9	11.	.028	.8	.192	.608	2.17	.474	1.696	.03	.72	22.7	22.5	27.	....	....
5190	" 8	" 9	§	"	VM.F.15	"	2861.6	277.5	2584.4	100.4	14.4	86.	B.	4.5	26.6	7.5	19.1	.016	1.28	.22	1.06	3.53	.474	3.056	.005	.72	23.7	24.	29.	...	29,500
5223	" 15	" 16	§	"	VM.F.1	"	3572.8	241.6	3331.2	96.8	14.	82.8	B.	5.1	34.2	7.7	26.5	.056	1.68	.224	1.456	5.24	.44	4.8	.002	1.04	24.8	24.5	28.	...	15,500
5272	" 22	" 23	§	"	VM F.1	"	3114.4	252.	2862.4	77.6	22.4	55.2	B.	4.8	31.3	8.1	23.2	.02	1.36	.176	1.184	4.12	.44	3.68	.003	.6	20.8	26.	32.	....	25,800
5312	" 29	" 30	§	"	VM.F.04	"	1734.	199.6	1534.4	49.2	15.6	33.6	B.	3.5	26.6	9.8	16.8	.016	.768	.176	.592	2.04	.472	1.568	.002	.44	20.4	24.	20.	....	8,025
5356	July 6	July 7	§	"	VM.F.05	"	1666.8	106.8	1560.	77.2	22.4	54.8	Blk.	4.3	21.6	9.6	15.	.02	.832	.16	.672	2.2	.472	1.728	.005	.52	22.6	26.	27.	....	6,100
5406	" 13	" 14	§	"	VM.F.15	"	2242.	206.8	2035.2	82.4	33.6	48.8	B.	3.9	27.1	8.4	18.7	.02	1.368	.16	1.208	3.48	.408	3.072	.002	.6	23.9	27.	35.	....	....
5459	" 20	" 21	§	"	VM.F.06	"	2069.6	195.6	1874.	72.	36.4	35.6	B.	4.15	27.2	10.8	16.4	.04	.88	.224	.656	2.2	.504	1.696	.003	.44	20.6	26.	27.	...	4,500
5515	" 27	" 28	§	"	VM.F.06	"	1523.6	211.	1309.6	42.8	26.	16.8	B.	4.6	24.	10.9	13.1	.016	.576	.24	.336	2.08	.344	1.736	.01	.4	16.6	29.	36	....	8,100
5553	Aug. 3	Aug. 4	§	"	VM.F.04	"	2012.	200.8	1811.2	68.8	35.2	33.6	B.	5.3	27.	8.6	18.4	.012	.8	.16	.64	2.12	.408	1.712	.01	.36	14.3	29.	37.	+	9,650
5605	" 10	" 11	§	"	VM.F.04	"	828.8	154.	674.8	63.2	31.2	32.	B.	6.	17.6	9.5	8.1	.014	.544	.112	.432	1.56	.26	1.2	.042	.36	12.9	26.	29.	+	8,350
5653	" 17	" 18	§	"	VM.F.1	"	1205.6	167.2	1038.4	102.	44.4	57.6	B.	5.6	21.8	7.3	14.5	.036	.672	.144	.528	1.8	.424	1.376	.01	.48	13.9	27.	32.	....	....
5712	" 24	" 25	§	"	VM.F.06	"	663.6	180.	483.6	51.2	28.8	22.4	B.	5.8	16.7	7.	9.7	.024	.512	.16	.352	1.4	.36	1.04	.005	.43	9.7	27.	32.	+	2,300
5757	" 31	Sept. 1	§	"	VM.F.06	"	853.6	215.2	638.4	55.2	22.8	32.4	B.	7.3	13.2	8.5	4.7	.06	.384	.144	.24	1.24	.416	.824	.007	.32	7.5	27.	32.	+	5,800
5815	Sept. 7	" 8	*	Much	M. F.03	"	559.6	193.2	366.4	28.	17.2	40.8	B.	6.	11.5	5.8	5.7	.024	.384	.224	.16	1.08	.376	.704	.004	.24	6.6	29.	38.	+	2,500
5866	" 14	" 15	*	"	M. F.03	"	310.4	253.2	57.2	29.6	18.	11.6	B.	4.6	11.6	5.8	5.8	.024	.384	.252	.132	1.16	.488	.672	.006	.16	6.6	22.	24.	−	2,750
5913	" 21	" 22	*	"	M. F.04	"	300.	175.6	124.4	37.2	29.6	7.6	B.	7.1	11.5	6.9	4.6	.02	.448	.188	.26	1.16	.456	.704	.01	.4	6.6	19.	20.	+	6,950
5971	" 28	" 29	*	"	M. F.06	"	215.6	165.2	50.4	23.6	18.	5.6	GB.	5.6	12.9	9.9	3.	.012	.448	.196	.252	1.06	.5	.56	.007	.2	5.3	16.	18.		4,100
6013	Oct. 5	Oct. 6	*	"	M. F.1	"	641.2	154.4	486.8	32.	17.6	14.4	B.	5.5	15.3	12.7	2.6	.012	.432	.24	.192	.98	.468	.512	.005	.12	4.5	15.	21.	+	1,850
6063	" 12	" 13	*	Cons'd	M. F.04	"	275.6	170.	105.6	9.6	7.2	2.4	B.	6.7	11.6	10.6	1.	.02	.336	.192	.144	.76	.212	.548	.005	.2	3.5	17.	22.	—	4,100
6127	" 20	" 21	*	"	M. F.08	"	286.4	180.	106.4	14.	13.2	.8	B.	9.4	9.3	6.5	2.8	.02	.432	.184	.248	.92	.408	.512	.005	.12	3.3	17.	18.	—	2,700
6179	" 26	" 27	*	"	M. F.04	"	397.2	182.8	211.4	18.8	12.	6.8	B.	7.9	9.6	8.1	1.5	.02	.416	.176	.24	.936	.264	.672	.007	.32	3.	17.	19.	+	3,650
6215	Nov. 2	Nov. 3	*	Much	M. F.05	"	309.6	204.1	105.2	21.2	....	....	B.	8.6	9.3	9.1	.2	.064	.384	.22	.164	.776	.488	.288	.015	.32	3.9	9.	2.	+	8,200
6276	" 13	" 14	*	Cons'd	M. F.2	"	276.	188.	88.	26.4	21.6	4.8	B.	7.9	11.4	9.5	1.9	.016	.432	.301	.128	.92	.488	.432	.014	.48	6.2	9	14.	—	1,850
6362	" 23	" 24	*	Much	M. F.25	"	338.4	192.8	145.6	36.	32.4	3.6	B.	10.5	15.6	10.8	4.8	.032	.56	.28	.28	1.	.68	.32	.015	.56	6.2	11.	10.	+	4,850
6423	" 30	Dec. 1	*	Cons'd	M. F.2	"	219.2	179.6	39.6	20.	17.6	2.4	B.	9.	10.7	5.4	5.3	.184	.352	.228	.124	.904	.616	.288	.015	.36	5.5	8.	17.	+	5,250
6489	Dec. 7	" 9	†	"	M. F.02	"	210.	168.8	41.2	18.4	16.	2.4	B.	8.2	12.	10.6	1.4	.108	.512	.24	.272	.968	.648	.32	.008	.28	4.9	3.	8.	+	3,400
6534	" 15	" 16	†	"	M. F.25	"	215.6	179.2	36.4	25.6	19.6	6.	B.	8.1	11.5	6.2	5.3	.032	.48	.248	.232	1.	.488	.512	.008	.52	4.6	0.	5.	+	10,050
6568	" 21	" 22	+	"	M. F.04	"	244.4	190.4	54.	36.4	29.2	7.2	B.	8.4	14.2	10.	4.2	.092	.432	.208	.224	.92	.552	.368	.015	.64	4.7	0.	5.	+	16,000

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Readish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 29.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER, T. J. BURRILL, University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4975	April 28	April 29	§	V. M'ch	VM. F.02	None	2404.	198.8	2205.2	64.	20.8	43.2	B.	3.7	29.7	6.1	23.6	.008	.8	.144	.656	2.33	.314	2.016	.027	.5	....	....	.....	....	....
5028	May 12	May 13	§	"	VM. F.15	"	1794.4	230.8	1563.6	67.2	26.8	40.4	B.	4.2	22.2	8.2	14.	.028	.96	.224	.736	2.41	.442	1.968	.017	.28	....	....	.....	....	....
5100	" 25	" 26	§	"	VM. F.01	"	2027.6	190.	1837.6	77.2	29.6	47.6	B.	2.28	27.5	10.3	17.2	.072	1.44	.176	1.264	4.09	.666	3.421	.016	.72	25.	....	.....	....	....
5139	June 1	June 2	§	"	VM. F.3	"	1554.8	226.8	1328.	88.	27.2	60.8	B.	2.9	25.4	12.1	13.3	.032	1.12	.224	.896	2.65	.57	2.08	.02	.64	22.7	22.	27.	....	....
5189	" 8	" 9	§	"	VM. F.1	"	3104.4	253.6	2850.8	103.2	16.8	86.4	B.	4.2	27.8	8.1	19.7	.024	1.28	.22	1.06	4.57	.506	4.064	.006	.6	23.7	24.	29.	....	....
5226	" 15	" 16	§	"	VM. F.2	"	3802.	219.6	3552.4	65.2	13.2	52.	B.	4.7	35.	8.	27.	.021	1.6	.208	1.392	5.4	.472	4.928	.003	1.	21.8	24.5	28.	...	10,500
5271	" 22	" 23	§	"	VM. F.15	"	3309.6	280.4	3029.2	83.6	32.4	51.2	B.	4.8	29.6	9.8	19.8	.022	1.2	.16	1.04	3.16	.504	2.656	.001	.6	20.8	26.	32.	...	12,350
5313	" 29	" 30	§	"	VM. F.04	"	2420.8	217.2	2203.6	48.4	9.2	39.2	G.	3.6	27.5	8.9	18.6	.02	.992	.128	.864	2.68	.472	2.208	.001	.44	20.4	24.	20.	....	15,800
5359	July 6	July 7	§	"	VM. F.05	"	2512.	205.2	2306.8	104.	32.4	71.6	B.	4.4	30.1	10.7	19.4	.036	.96	.16	.8	3.	.44	2.56	.004	.52	22.6	26.	27.	....	11,500
5408	" 13	" 14	§	"	VM. F.2	"	2665.6	208.8	2156.8	126.8	16.8	80.	B.	4.2	28.2	7.8	20.4	.032	1.6	.192	1.408	3.56	.408	3.152	.002	.8	23.9	27.	35.	....	6,100
5456	" 20	" 21	§	"	VM. F.05	"	2323.2	200.	2123.2	106.	39.2	66.8	B.	4.25	32.1	11.5	20.6	.032	.8	.176	.621	2.36	.472	1.888	.008	.52	20.6	26.	27.	....	7,500
5514	" 27	" 28	§	"	VM. F.04	"	2141.6	188.8	1952.8	92.4	21.2	71.2	B.	4.9	23.8	9.3	14.5	.012	.576	.192	.384	2.2	.376	1.824	.008	.36	16.6	29.	36.	....	2,220
5556	Aug. 3	Aug. 4	§	"	VM. F.04	"	2390.8	197.6	2193.2	73.6	28.4	45.2	B.	5.4	27.5	8.5	19.	.008	.768	.128	.64	2.12	.36	1.76	.011	.36	14.3	29.	37.	+	10,050
5604	" 10	" 11	§	"	VM. F.04	"	1646.4	161.6	1484.8	72.	28.4	43.6	B.	4.6	23.1	8.2	14.9	.016	.736	.112	.624	1.88	.28	1.6	.007	.32	12.9	26.	29.	+	7,450
5652	" 17	" 18	§	"	VM. F.15	"	1580.8	177.6	1403.2	126.8	44.	82.8	B.	6.	23.9	6.8	17.1	.036	.704	.164	.54	2.04	.36	1.68	.007	.48	13.9	27.	32.	....	....
5714	" 24	" 25	§	"	VM. F.04	"	1283.2	186.8	1096.4	76.8	28.8	48.	B.	5.95	21.	6.9	14.1	.02	.736	.14	.596	1.8	.408	1.392	.004	.4	9.7	27.	32.	+	34,000
5760	" 31	Sept. 1	§	"	VM. F.05	"	1008.4	195.2	813.2	30.4	17.6	12.8	B.	6.4	15.	7.8	7.2	.024	.384	.192	.192	1.32	.296	1.024	.017	.28	7.5	27.	32.	+	11,900
5817	Sept. 7	" 8	*	Much	M. F.03	"	829.2	202.8	626.4	36.4	13.2	23.2	B.	6.8	11.9	4.2	7.7	.012	.416	.144	.272	1.32	.296	1.024	.004	.28	6.6	29.	38.	+	9,600
5869	" 14	" 15	*	"	M. F.03	"	752.4	215.2	537.2	43.6	24.4	19.2	B.	7.3	12.4	4.5	7.9	.024	.64	.132	.508	1.48	.328	1.152	.004	.24	6.6	22.	21.	+	7,900
5916	" 21	" 22	*	"	M. F.03	"	1407.2	299.2	1108.	.....	.....	....	B.	8.35	13.3	5.1	8.2	.012	.384	.104	.28	1.	.36	.64	.008	.3	6.6	19.	20.	+	5,500
5970	" 28	" 29	*	"	M. F.04	"	671.6	231.6	440.	47.6	26.	21.6	B.	9.9	11.9	5.9	6.	.016	.448	.124	.324	1.06	.308	.752	.012	.16	5.3	16.	18.	‡	17,500
6012	Oct. 5	Oct. 6	*	"	M. F.06	"	662.8	232.4	430.4	29.2	17.2	12.	B.	11.3	14.1	7.9	6.2	.008	.416	.128	.288	.98	.356	.624	.005	.12	4.5	15.	21.	+	11,150
6062	" 12	" 13	*	Cons'd	M. F.03	"	630.	259.6	370.4	16.4	9.2	7.2	B.	13.3	11.7	8.	3.7	.036	.336	.116	.22	.84	.18	.66	.005	.2	3.5	17.	22.	+	15,700
6126	" 20	" 21	*	"	M. F.04	"	552.8	253.6	299.2	5.6	5.2	.4	B.	14.6	8.7	4.6	4.1	.022	.32	.092	.228	1.08	.344	.736	.008	.16	3.3	17.	18.	+	10,950
6178	" 26	" 27	*	"	M. F.02	"	600.4	266.4	334.	13.6	7.6	6.	B.	14.4	8.1	5.2	2.9	.016	.336	.14	.196	.744	.152	.592	.006	.24	3.	17.	19.	+	9,300
6216	Nov. 2	Nov. 3	*	Much	M. F.04	"	597.2	271.2	326.	32.	29.6	2.4	B.	14.8	8.9	5.8	3.1	.032	.336	.124	.212	.648	.28	.368	.012	.32	3.9	9.	2.	—	11,700
6275	" 13	" 14	*	Cons'd	M. F.06	"	375.2	236.4	138.8	20.	18.4	1.6	B.	11.7	9.1	7.7	1.4	.012	.352	.208	.144	.84	.36	.48	.005	.28	6.2	9.	14.	—	6,600
6361	" 23	" 24	*	Much	M. F.04	"	573.2	224.	349.2	38.4	20.8	17.6	B.	9.9	12.5	7.4	5.1	.032	.352	.216	.136	.808	.488	.32	.008	.28	6.2	11.	10.	+	36,200
6421	" 30	Dec. 1	*	Cons'd	M. F.03	"	574.8	257.6	317.2	18.	11.6	6.4	G.	13.1	10.	6.1	3.9	.048	.4	.152	.248	.936	.328	.608	.01	.16	5.5	8.	17.	+	45,800
6485	Dec. 7	" 9	*	Much	M. F.03	"	668.4	274.	394.4	16.8	9.2	7.6	B.	15.9	9.4	6.	3.4	.056	.368	.16	.208	.904	.36	.544	.007	.28	4.9	3.	8.	+	22,800
6535	" 15	" 16	*	"	M. F.04	"	588.8	254.8	334.	33.2	18.	15.2	B.	14.3	11.8	6.8	5.	.024	.352	.256	.096	.92	.424	.496	.008	.24	4.6	0.	5.	+	7,000
6571	" 21	" 22	*	Cons'd	M. F.02	"	558.4	258.8	299.6	19.6	15.6	4.	B.	14.9	12.3	6.3	6.	.06	.288	.144	.144	.84	.36	.48	.006	.32	4.7	0.	5.	+	15,750

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 30.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER, T. J. BURRILL, University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, AT CHAIN OF ROCKS, INLET TOWER, ST. LOUIS WATER WORKS.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5027	May 12	May 13	§	V. M'ch	VM. F.04	None	2100.	226.4	2173.6	65.6	27.6	38.	B.	4.2	24.7	6.8	17.9	.044	1.12	.192	.928	3.05	.314	2.736	.019	.36	....	....	......	....	....
5069	" 25	" 26	§	"	VM. F.03	"	3052.4	186.8	2865.6	106.4	21.2	85.2	B.	3.41	29.3	9.1	20.2	.06	1.92	.224	1.696	4.73	.506	4.224	.011	6	25.	...	......	....	....
5110	June 1	June 2	§	"	VM. F.08	"	2418.4	186.8	2261.6	105.6	21.6	81.	B.	3.8	28.9	10.7	18.2	.044	1.44	.16	1.28	3.45	.442	3.008	.011	.64	22.7	22.	27.	....	....
5198	" 8	" 9	§	"	VM. F.06	"	3139.2	240.	2899.2	75.2	12.4	32.8	B.	3.6	28.1	8.	20.1	.032	1.12	.24	.88	4.41	.54	3.87	.008	.36	23.7	24.	29.	....	26,000
5225	" 15	" 16	§	"	VM. F.1	"	4032.8	236.8	3796	52.8	12.	40.8	B.	4.5	31.7	8.6	23.1	.02	1.6	.192	1.408	5.72	.472	5.248	.002	1.12	24.8	24.5	28.	....	17,500
5270	" 22	" 23	§	"	VM. F.1	"	3509.6	266.8	3242.8	81.4	20.4	61.	B.	4.8	31.3	8.	23.3	.02	1.28	.16	1.12	3.64	.504	3.136	.003	.6	20.8	26.	32.	...	21,250
5314	" 29	" 30	§	"	VM. F.01	"	2511.6	219.2	2292.4	65.2	13.2	52.	B.	3.5	29.2	8.9	20.3	.018	1.024	.128	.896	2.84	.504	2.336	.001	.6	20.4	24.	20.	....	7,650
5358	July 6	July 7	§	"	VM. F.05	"	2916.	209.6	2706.4	113.6	26.8	86.8	B.	4.5	31.8	8.4	23.4	.04	1.184	.128	1.056	3.48	.344	3.136	.002	.48	22.6	26.	27.	...	7,000
5407	" 13	" 14	§	"	VM. F.15	"	2974.4	191.6	2782.8	119.2	30.8	88.4	B.	4.3	29.4	7.2	22.2	.04	1.664	.176	1.488	3.8	.6	3.2	.002	.68	23.9	27.	35.	....	6,750
5457	" 20	" 21	§	"	VM. F.05	"	2560.	188.8	2371.2	84.4	32.4	52.	B.	4.55	30.7	9.2	21.5	.024	.96	.192	.768	2.84	.408	2.432	.006	.44	20.6	26.	27.	....	23,000
5513	" 27	" 28	§	"	VM. F.06	"	2422.4	192.	2230.4	74.4	26.4	48.	B.	4.85	24.2	7.8	16.4	.008	.8	.16	.64	2.48	.232	2.248	.008	.4	15.6	29	36.	....	9,050
5555	Aug. 3	Aug 4	§	"	VM F.01	"	2646.	212.8	2433.2	82.8	36.	16.8	B.	5.4	28.7	8.1	20.6	.008	.8	.132	.668	2.68	.328	2.352	.013	.44	11.3	29.	37.	+	20,600
5603	" 10	" 11	§	"	VM. F.01	"	2129.6	176.	1953.6	100.4	23.6	76.8	B.	4.9	23.7	7.8	15.9	.02	.96	.076	.884	2.68	.392	2.288	.004	.28	12.9	26.	29.	+	11,050
5654	" 17	" 18	§	"	VM. F.1	"	1918.	174.8	1713.2	134.4	18.	86.4	B.	6.8	21.3	6.1	18.2	.01	.704	.124	.58	2.36	.344	2.016	.008	.52	13.9	27.	32.	....	....
5713	" 24	" 25	§	"	VM. F.05	"	1121.6	185.2	1236.4	83.2	16.4	66.8	B.	9.	22.5	5.7	16.8	.016	.896	.122	.774	2.2	.248	1.952	.008	.4	9.7	27	32.	−	38,000
5759	" 31	Sept. 1	§	"	VM. F.05	"	1227.6	200.	1027.6	39.2	18.	21.2	B.	7.	14.7	7.5	7.2	.028	.416	.128	.288	1.48	.28	1.2	.002	.32	7.5	27.	32.	....	12,100
5818	Sept 7	" 8	*	Much	M. F.03	"	1088.	216.	872.	50.8	18.4	32.4	B.	7.7	12.9	3.6	9.3	.018	.381	.08	.304	1.32	.28	1.04	.002	.24	6.6	29.	38.	+	16,900
5868	" 14	" 15	*	"	M. F.01	"	1010.	216.	761.	32.4	14.8	17.6	B.	8.9	12.9	5.6	7.3	.024	.381	.12	.261	1.32	.28	1.01	.004	.24	6.6	22.	21.	+	12,800
5914	" 21	" 22	*	"	M. F.01	"	810.8	239.2	601.6	26.8	16.	10.8	B.	10.35	12.1	4.1	8.3	.008	.381	.128	.256	1.	.312	.688	.005	.45	6.6	19	20.	+	11,050
5969	" 28	" 29	*	"	M. F.03	"	775.6	248.	527.6	12.	12.8	29.2	B.	11.35	11.8	5.2	6.6	.012	.18	.108	.372	1.14	.308	.832	.01	.28	5.3	16.	18.	+	18,200
6010	Oct. 5	Oct. 6	*	"	M. F.07	"	717.6	256.4	461.2	30.8	16.4	11.4	B.	14.1	13.	6.2	6.8	.012	.352	.112	.24	.98	.352	.628	.007	.2	4.5	15.	21.	+	14,500
6065	" 12	" 13	*	Cons'd	M. F.02	"	658.8	276.	382.8	27.6	12.1	15.2	B.	14.3	11.8	7.6	4.2	.04	.368	.08	.288	1.	.118	.852	.006	.24	3.5	17.	22.	+	24,200
6125	" 20	" 21	*	"	M. F.03	"	622.1	278.	341.4	10.	6.	4.	B.	16.1	7.9	3.9	4.	.02	.272	.144	.128	1.	.36	.64	.007	.16	3.3	17.	18.	—	11,050
6177	" 26	" 27	*	"	M. F.02	"	632.8	281.6	351.2	16.8	11.6	5.2	B.	15.4	7.6	4.9	2.7	.02	.32	.14	.18	.84	.264	.576	.006	.28	3.	17.	19.	+	8,100
6217	Nov. 2	Nov. 3	*	Much	M. F.01	"	625.6	269.6	356.	15.6	10.	5.6	B.	11.3	8.5	6.6	1.9	.032	.352	.1	.252	.741	.248	.496	.01	.36	3.9	9.	2.	+	12,000
6274	" 13	" 14	*	Cons'd	M. F.03	"	422.8	281.6	141.2	22.8	16.1	6.4	B.	16.4	7.6	6.2	1.1	.016	.256	.16	.096	.81	.392	.418	.007	.16	6.2	9	14.	−	7,700
6363	" 23	" 24	*	Much	M. F.05	"	676.	256.	420.	32.	21.2	10.8	B.	11.85	11.9	6.4	5.5	.028	.368	.148	.22	1.16	.36	.8	.008	.21	6.2	11.	10.	+	16,750
6425	" 30	Dec. 1	*	Cons'd	M. F.03	"	625.6	278.8	346.8	32.4	17.6	14.8	B.	14.4	9.8	5.4	4.1	.04	.288	.156	.132	.84	.36	.48	.008	.28	5.5	8.	17.	+	70,000
6486	Dec. 7	" 9	*	Much	M. F.02	"	689.2	290.	399.2	31.4	16.4	18.	B.	16.3	9.2	5.	4.2	.061	.368	.141	.224	1.128	.36	.768	.006	.32	4.9	3.	8.	+	35,500
6532	" 15	" 16	*	"	M. F.03	"	702.8	288.4	414.4	28.4	17.6	10.8	B.	16.2	11.6	5.4	6.2	.032	.352	.112	.21	.92	.232	.688	.004	.21	4.6	0.	5.	+	51,000
6570	" 21	" 22	*	"	M. F.02	"	651.8	281.	370.8	27.2	18.8	8.4	B.	16.8	11.2	6.7	4.5	.052	.352	.112	.21	.68	.424	.256	.008	.24	4.7	0.	5.	+	5,450

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 31.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 FEET FROM MISSOURI SHORE, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5026	May 12	May 13	§	V.M'ch	V.MF.03	None	3256.4	248.	3008.4	62.8	15.2	47.6	B.	5.22	26.6	6.3	20.3	.04	1.2	.16	1.04	3.53	.282	3.248	.012	.24	....	....	......	....	....
5102	" 25	" 26	§	"	V.MF.3	"	3759.2	216.8	3542.4	61.6	13.2	48.4	B.	3.81	29.9	7.8	22.1	.088	2.4	.16	2.24	6.33	.41	5.92	.016	.6	25.	....	......	....	....
5141	June 1	June 2	§	"	V.MF.1	"	2922.8	206.8	2716.	108.4	22.8	85.6	B.	2.6	28.4	10.2	18.2	.036	1.6	.16	1.44	4.25	.474	3.776	.007	.6	22.7	22.	27.	....	....
5187	" 8	" 9	§	"	V.MF.05	"	3565.2	262.8	3302.4	130.8	41.4	86.4	B.	3.8	27.9	7.1	20.8	.036	1.36	.24	1.12	5.37	.57	4.8	.006	.6	23.7	24.	29.	....	27,500
5224	" 15	" 16	§	"	V.MF.1	"	4139.2	231.6	3907.6	80.4	14.4	66.	B.	4.6	35.6	7.6	28.	.052	2.24	.192	2.048	6.04	.6	5.44	.001	.96	24.8	24.5	28.	....	17,000
5269	" 22	" 23	§	"	V.MF.1	"	3813.6	281.6	3532.	88.4	21.2	67.2	B.	4.8	33.	6.8	26.2	.024	1.2	.16	1.04	4.6	.472	4.128	.004	.76	20.8	26.	32.	....	25,800
5315	" 29	" 30	§	"	V.MF.05	"	2603.6	222.8	2380.8	52.8	10.4	42.4	B.	3.6	29.2	9.6	19.6	.02	1.088	.112	.976	2.68	.344	2.336	.001	.6	20.4	24.	20.	....	4,700
5357	July 6	July 7	§	"	V.MF.05	"	2896.8	224.8	2672.	75.2	25.2	50.	B.	5.	29.8	7.8	22.	.04	1.216	.144	1.072	3.48	.312	3.168	.002	.6	22.6	26.	27.	....	8,350
5406	" 13	" 14	§	"	V.MF.15	"	3253.2	196.8	3056.4	132.4	38.	94.4	B.	4.6	30.1	6.6	23.5	.048	1.856	.144	1.712	4.76	.472	4.288	.002	.8	23.9	27.	35.	....	4,160
5458	" 20	" 21	§	"	V.MF.05	"	2866.8	191.8	2672.	112.8	36.	76.8	B.	4.6	32.3	9.2	23.1	.032	.88	.16	.72	2.36	.536	1.824	.005	.48	20.6	26.	27.	....	2,100
5512	" 27	" 28	§	"	V.MF.05	"	2622.8	188.4	2434.4	61.6	27.2	34.4	B.	4.6	25.5	7.4	18.1	.012	.864	.16	.704	2.68	.232	2.448	.005	.44	16.6	29.	36.	+	9,000
5554	Aug. 3	Aug. 4	§	"	V.MF.03	"	2719.6	216.4	2503.2	97.6	34.	63.6	B.	5.55	28.8	7.	21.8	.012	.8	.16	.64	2.68	.376	2.304	.016	.56	14.3	29.	37.	+	29,800
5602	" 10	" 11	§	"	V.MF.02	"	2518.8	182.4	2336.4	74.4	21.6	52.8	B.	5.1	34.	6.8	27.2	.008	.96	.072	.888	2.68	.248	2.432	.005	.36	12.9	26.	29.	+	24,700
5655	" 17	" 18	§	"	V.MF.1	"	2187.2	168.4	2018.8	119.6	28.	91.6	B.	7.3	24.5	5.5	19.	.028	.864	.096	.768	2.6	.328	2.272	.006	.48	13.9	27.	32.	....	....
5711	" 24	" 25	§	"	V.MF.05	"	1605.6	204.4	1401.2	78.8	24.8	54.	B.	6.8	22.6	6.6	16.	.016	.96	.18	.78	2.6	.296	2.304	.007	.52	9.7	27.	32.	+	53,000
5758	" 31	Sept. 1	§	"	V.MF.06	"	1239.2	204.4	1034.8	62.4	17.2	45.2	B.	7.2	15.	8.	7.	.032	.448	.096	.352	1.48	.264	1.216	.005	.36	7.5	27.	32.	+	21,600
5816	Sept. 7	" 8	§	"	V.MF.02	"	1060.4	219.6	840.8	41.2	22.	19.2	B.	8.	13.	4.2	8.8	.012	.416	.12	.296	1.24	.302	.938	.005	.24	6.6	29.	38.	+	10,550
5867	" 14	" 15	*	Much	M. F.04	"	1081.2	247.6	833.6	32.	20.4	11.6	B.	10.35	12.9	3.5	9.4	.016	.416	.088	.328	1.32	.232	1.088	.007	.4	6.6	22.	21.	+	7,650
5915	" 21	" 22	*	"	M. F.02	"	964.4	258.4	706.	67.2	22.8	44.4	B.	12.25	12.3	3.3	9.	.008	.416	.056	.36	1.16	.28	.88	.006	.45	6.6	19.	20.	+	12,550
5972	" 28	" 29	*	"	M. F.03	"	825.6	256.8	568.8	32.4	23.2	9.2	B.	12.3	11.3	10.2	1.1	.012	.352	.1	.252	.9	.148	.752	.008	.16	5.3	16.	18.	+	6,250
6011	Oct. 5	Oct. 6	*	"	M. F.03	"	772.4	271.2	501.2	34.8	12.4	22.4	B.	14.8	12.9	5.5	7.4	.008	.352	.144	.208	.98	.244	.736	.008	.24	4.5	15.	21.	+	10,450
6064	" 12	" 13	*	Cons'd	M. F.02	"	701.2	280.8	420.4	18.	8.	10.	B.	14.9	10.5	7.5	3.	.02	.272	.08	.192	.92	.148	.772	.005	.28	3.5	17.	22.	+	13,200
6124	" 20	" 21	*	"	M. F.03	"	643.2	291.2	352.	12.	4.8	7.2	B.	17.1	7.7	4.5	3.2	.02	.272	.108	.164	.92	.296	.624	.01	.2	3.3	17.	18.		7,800
6180	" 26	" 27	*	"	M. F.02	"	663.6	294.4	369.2	16.8	14.4	2.4	B.	15.7	7.8	3.7	4.1	.03	.336	.072	.264	.744	.232	.512	.005	.36	3.	17.	19.	+	9,300
6218	Nov. 2	Nov. 3	*	Much	M. F.05	"	651.4	287.2	367.2	31.2	10.	21.2	B.	14.8	8.6	6.7	1.9	.024	.352	.084	.268	.712	.2	.512	.008	.32	3.9	9.	2.	+	12,000
6273	" 13	" 14	*	Cons'd	M. F.02	"	484.4	315.2	169.2	16.4	9.6	6.8	B.	22.1	6.	4.3	1.7	.012	.208	.16	.048	.68	.328	.352	.007	.32	6.2	9.	14.	+	8,100
6365	" 23	" 24	*	Much	M. F.02	"	798.8	289.6	509.2	32.	16.	16.	B.	14.9	10.	4.5	5.5	.028	.352	.132	.22	1.	.264	.736	.008	.24	6.2	11.	10.	+	36,000
6422	" 30	Dec. 1	*	Cons'd	M. F.02	"	710.	301.6	408.4	28.	16.	12.	B.	16.8	9.5	4.9	4.6	.04	.288	.12	.168	.872	.296	.576	.007	.28	5.5	8.	17.	+	61,100
6487	Dec. 7	" 9	*	Much	M. F.02	"	768.4	316.4	452.	30.8	14.8	16.	B.	18.4	8.3	3.8	4.5	.06	.384	.24	.144	1.16	.36	.8	.008	.2	4.9	3.	8.	+	25,000
6533	" 15	" 16	*	"	M. F.02	"	764.8	299.2	465.6	24.4	11.6	12.8	B.	18.7	11.4	4.	7.4	.04	.336	.076	.26	.84	.296	.544	.004	.24	4.6	0.	5.	+	40,000
6569	" 21	" 22	*	"	M. F.02	"	705.2	304.	401.2	23.2	20.4	2.8	BG.	18.7	11.	4.7	6.3	.068	.256	.112	.144	.76	.296	.464	.009	.32	4.7	0.	5.	+	10,700

TURBIDITY—*Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 32.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSOURI RIVER. FORT BELLEFONTAINE, WEST ALTON, MO.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Residue on Evaporation: Loss on Ig'n.: Tot'l	Residue on Evaporation: Loss on Ig'n.: Dis solv'd	Residue on Evaporation: Loss on Ig'n.: Sus. pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dis-solv'd	Nitrogen as Ammonia: Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
5369	July 10	July 10	*	Cons'd	M.	None	.....	.....	.....	.....	....	....	.....	7.5	....	...	....	.....	.....	.....	.....	.....	.....	.....	.....	.12	11.	27.	.....	?	48,500
5505	" 27	" 28	§	V. M'ch	M. F.08	"	3246.	201.2	3044 8	133.6	14.8	118 8	B.	5.1	27.4	7.4	20.	.02	.864	.128	.736	2.68	.328	2.352	.01	.36	13.3	29.	.....	+	20,000
5565	Aug. 2	Aug. 4	§	"	VM. F.03	"	3514.	214 4	3299.6	193.6	17.6	176.	B.	5.6	31.9	6.5	25.4	.012	.8	.16	.64	3.16	.312	2.848	.004	.4	12.4	29.	34.	....	8,450
5614	" 10	" 12	§	"	VM. F.02	"	2989.2	198 4	2790.8	96.8	20 8	76.	B.	6.35	28.3	7.4	20.9	.018	1.024	.064	.96	2.84	.184	2.656	.006	.32	11.6	27.	30.	+	36,000
5662	" 17	" 18	§	"	VM. F.1	"	2178.8	345.6	2133.2	160.	61.4	95.6	B.	5.8	25.5	5.8	19.7	.016	1.052	.144	.908	2.84	.382	2.458	.01	.68	11.2	28.	35.	....	....
5715	" 24	" 25	§	"	VM. F.05	"	1926.4	196.1	1730.	82.8	25.6	57.2	B.	6.3	16.	5.2	10.8	.02	1.024	.1	.924	2.36	.232	2.128	.004	.56	9.2	28.	35.	+	70,333
5768	" 31	Sept. 1	§	"	VM. F.04	"	1500.8	221.6	1279.2	43.2	22 4	20.8	G.	8.1	15.1	4.	11.1	.028	.48	.1	.38	1.88	.248	1.632	.002	.44	8.3	28.	29.	+	16,000
5821	Sept. 7	" 8	*	Much	M. F.02	"	1152.4	248.8	903.6	40.	16.	24.	B.	9.2	12.6	3.4	9.2	.02	.544	.064	.48	1.32	.28	1.04	.003	.36	7.3	29.	34.	....	....
5872	" 14	" 15	§	"	M. F.03	"	1192.	260.4	931.6	48.4	24.	24.4	B.	10.9	12.9	3.	9.9	.012	.416	.116	.3	1.4	.28	1.12	.006	.28	6.7	22.	27.	+	11,100
5918	" 21	" 22	*	"	M. F.03	"	1034.	200.8	833.2	32.4	14.8	17.6	B.	12.4	12.7	3.5	9.2	.06	.352	.08	.272	1.08	.28	.8	.007	.4	6.1	20.	22.	+	15,850
5976	" 28	" 29	*	"	M. F.02	"	921.6	277.2	641.4	23.2	14.	9.2	B.	14.8	11.5	5.4	6.1	.006	.48	.101	.376	1.14	.276	.861	.008	.28	5.5	18.	17.	+	10,000
6014	Oct. 5	Oct. 6	*	"	M. F.02	"	860.8	372.4	488 4	22.4	9.6	12.8	B.	16.3	10.9	4.2	6.7	.024	.116	.06	.356	1.092	.228	.864	.007	.2	5.	17.	21.	—	21,500
6067	" 12	" 13	*	"	M. F.03	"	810.	307.2	502.8	33.6	11.6	22.	B.	17.	9.	3.7	5.3	.012	.288	.092	.196	.744	.18	.564	.007	.28	4.8	22.	25.	—	16,000
6122	" 19	" 20	*	"	M. F.03	"	706 4	301.2	405.2	16.4	9.6	6.8	B.	18.1	10.1	3.9	6.2	.024	.288	.092	.196	1.	.184	.816	.005	.36	4.6	18.	19.	+	18,000
6183	" 26	" 27	*	"	M. F.03	"	831.2	309.6	521.6	13.6	10.8	2.8	B.	18.	7.7	3.6	4.1	.024	.288	.08	.208	.744	.232	.512	.007	.36	4.5	19.	23.	—	9,800
6220	Nov. 2	Nov. 3	*	"	M. F.02	"	694.	308.	386.	61.6	14.4	47.2	B.	16.9	8.6	3.8	4.8	.032	.32	.072	.218	.68	.168	.512	.015	.28	4.7	11.	0.	+	12,500
6262	" 9	" 10	*	"	M. F.02	"	672.4	336.	336.1	18.8	8.8	10.	B.	23.9	7.8	4.	3.8	.028	.32	.112	.208	.68	.216	.464	.009	.24	4.5	12.	23.	+	25,400
6326	" 16	" 18	*	"	M. F.02	"	687.2	340.8	346.4	18.8	13.6	5.2	B.	29.9	6.7	3.7	3.	.032	.208	.144	.064	.68	.36	.32	.006	.24	4.4	12.	19.	—	6,650
6372	" 23	" 24	*	"	M. F.02	"	882 8	314.	568.8	22.8	16.8	6.	B.	16.15	10.9	4.8	6.1	.04	.352	.124	.228	.904	.36	.544	.005	.24	4.9	11.	10.	+	60,000
6435	" 30	Dec. 1	*	"	M. F.01	"	736.	318.8	417.2	16.8	15.2	1.6	B.	17.9	6.6	2.5	4.1	.032	.24	.12	.12	.808	.296	.512	.006	.36	5.	10.	17.	+	38,000
6490	Dec. 7	" 9	*	Cons'd	M. F.02	"	832.	317 2	514.8	16.4	14.8	1.6	B.	18.8	7.9	3.	4.9	.05	.32	.112	.208	1.224	.424	.8	.008	.32	5.5	5.	12.	+	12,000
6536	" 11	" 15	*	Much	M. F.03	"	845 2	310.	535.2	32.4	18.	14.4	B.	19.5	11 3	3.9	7.4	.04	.416	.112	.304	1.08	.232	.818	.005	.28	4.7	2.	—5.	....	17,400
6576	" 21	" 23	*	"	M. F.03	"	517.2	336.8	180.4	15.2	13 6	1.6	BG.	22.	11.	4 7	6.3	.06	.272	.096	.176	.92	.328	.592	.005	.16	4.9	2.	9.	+	1,500
6596	" 28	" 29	*	"	M. F.02	"	517.2	336.8	180.4	15.2	13.6	1.6	G.	22.	8.5	4.4	4.1	.08	.176	.08	.096	.456	.232	.221	.005	36	3.2	1.	—2.	....	8,000

TURBIDITY—*Decided. §Very Decided. + Distinct. ‡ Very Slight. ‖ Slight.

COLOR M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray Brown.

TABLE 33.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER, T. J. BURRILL, University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 YARDS FROM ILLINOIS SHORE, JEFFERSON BARRACKS MO.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dis-solved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dis-solved.	Organic Nitrogen. Sus-pended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4985	May 1	May 2	§	V.M'ch	M. F.06	None	2220.4	196.	2024.4	96.	19.6	76.4	B.	2.8	27.	7.3	19.7	.022	1.04	.192	.848	1.85	.45	1.4	.035	.6	....	...	......	....	....
5046	" 16	" 17	§	"	M. F.04	"	1519.6	187.6	1332.	47.6	13.6	34.	B.	3.4	16.8	7.7	9.1	.08	1.024	.224	.8	2.89	.49	2.4	.009	.6	....	....	......	....	....
5170	June 6	June 7	§	"	M. F.15	"	2717.2	214.	2503.2	75.2	16.4	58.8	B.	4.3	38.	9.	29.	.02	1.52	.224	1.296	4.25	.506	3.744	.004	.8	....	....	......	....	90,500
5237	" 16	" 17	§	"	M. F.1	"	3007.2	274.4	2732.8	74.4	21.2	53.2	B.	5.2	34.	7.5	26.5	.032	1.36	.192	1.168	4.44	.504	3.936	.011	.64	22.8	26.	......	....	66,000
5281	" 23	" 24	§	"	M. F.15	"	2994.8	258.	2736.8	36.	13.2	22.8	B.	4.6	30.4	7.2	23.2	.024	.88	.192	.688	3.8	.44	3.36	.003	.52	22.	28.	......	....	63,000
5320	" 29	" 30	§	"	VM. F.04	"	2107.6	216.4	1891.2	46.	28.	18.	B.	3.4	27.1	9.7	17.4	.02	1.024	.112	.912	2.44	.344	2.096	.002	.64	20.5	26.	20.	....	45,500
5365	July 6	July 7	§	"	VM. F.1	"	1930.8	214.	1716.8	76.8	30.4	46.4	B.	4.6	29.1	12.6	16.5	.028	.96	.192	.768	2.76	.472	2.288	.004	.6	22.9	26.	......	....	10,050
5415	" 14	" 15	§	"	VM. F.5	"	2403.6	178.4	2225.2	124.8	33.6	91.2	B.	3.8	43.8	8.2	35.6	.098	1.376	.16	1 216	3.32	.552	2.768	.006	.64	23.6	28.	......	....	4,050
5462	" 21	" 22	§	"	VM. F.07	"	2016.	186.8	1829.2	81.6	32.8	48.8	B.	4.9	29.6	7.7	21.9	.028	.832	.192	.64	2.68	.36	2.32	.011	.48	19.8	28.	......	....	11,850
5508	" 27	" 28	§	"	VM. F.2	"	2665.6	208.8	2456.8	126.8	46.8	80.	B.	4.2	28.2	7.8	20.4	.032	1.6	.192	1.408	3.56	.408	3.152	.002	.8	16.2	30.	......	....	14,250
5558	Aug. 3	Aug. 4	§	"	VM. F.04	"	1988.8	207.6	1781.2	76.	34.	42.	B.	5.4	24.3	8.3	16.	.012	.672	.116	.556	1.8	.376	1.424	.007	.36	14.3	32.	......	+	18,700
5616	" 11	" 12	§	"	VM. F.04	"	1145.6	156.4	989.2	71.2	30.8	40.4	B.	5.	23.	11.2	11.8	.036	.576	.132	.444	1.56	.504	1.056	.033	.32	14.4	29.	......	+	25,600
5660	" 17	" 18	§	"	VM. F.2	"	1184.8	164.4	1020.4	98.8	39.2	59.6	B.	5.5	19.7	7.8	11.9	.036	.608	.14	.468	1.44	.376	1.064	.008	.48	13.9	29.	......	....	....
5720	" 25	" 26	§	"	VM. F.07	"	752.	184.4	567.6	56.	21.6	34.4	B.	6.4	17.5	6.	11.5	.06	.48	.144	.336	1.4	.392	1.008	.007	.28	8.4	30.	......	—	41,000
5764	" 31	Sept. 1	§	"	VM. F.03	"	844.4	216.	628.4	34.4	27.6	6.8	B.	6.4	13.9	6.	7.9	.04	.416	.128	.288	1.16	.376	.784	.007	.4	7.5	30.	......	+	266,000
5826	Sept. 8	" 9	*	Much	M. F.03	"	529.6	198.	331.6	43.6	22.4	21.2	B.	6.05	10.9	5.8	5.1	.012	.384	.128	.256	1.16	.44	.72	.004	.24	6.3	30.	......	+	124,500
5860	" 14	" 15	*	"	M. F.08	"	367.2	192.8	174.4	24.	22.8	1.2	B.	5.3	11.2	6.6	4.6	.024	.416	.18	.236	1.16	.376	.784	.01	.16	6.8	22.	......	+	19,500
5919	" 22	" 23	*	"	M. F.03	"	326.	195.2	130.8	31.2	21.2	10.	B.	6.75	12.8	7.5	5.3	.024	.352	.168	.184	1.	.28	.72	.007	.12	6.7	19.	......	+	100,000
5967	" 28	" 29	*	"	M. F.07	"	300.	173.6	126.4	25.2	....	....	B.	6.4	12.4	10.5	1.9	.012	.448	.2	.248	1.22	.58	.64	.009	.16	5.3	17.	......	+	33,000
6018	Oct. 6	Oct. 7	*	Cons'd	M. F.05	"	255.6	172.	83 6	17.2	11.2	6.	B.	6.1	14.2	11.3	2.9	.068	.432	.212	.22	1.124	.356	.768	.005	.12	4.1	16.	......	+	71,000
6058	" 12	" 13	*	"	M. F.05	"	280.	192.	88.	18.8	10.4	8.4	B.	7.3	11.9	9.7	2.2	.032	.332	.216	.116	.92	.276	.644	.006	.16	3.5	20.	......	—	60,000
6116	" 19	" 20	*	"	M. F.04	"	301.2	198.	103.2	24.8	18.	6.8	B.	9.4	11.	7.8	3.2	.032	.352	.196	.156	.84	.424	.416	.006	.2	3.2	19.	......	....	....
6171	" 26	" 27	*	"	M. F.03	"	327.6	194.	133.6	26.4	22.8	3.6	B.	8.9	9.	7.3	1.7	.032	.432	.172	.26	.872	.36	.512	.004	.28	2.8	19.	......	?	47,500
6223	Nov. 3	Nov. 4	*	"	M. F.05	"	316.4	210.	106.4	26.4	21.6	4.8	B.	8.9	9.3	8.2	1.1	.04	.384	.172	.212	.968	.264	.704	.012	.36	4.	9.	......	+	4,500
6264	" 11	" 13	*	Much	M. F.06	"	310.4	197.6	112.8	36.	30.8	5.2	B.	6.6	12.4	9.3	3.1	.052	.448	.284	.164	1.064	.616	.448	.013	.36	5.4	9.	......	+	4,500
6319	" 16	" 17	*	Cons'd	M. F.15	"	194.8	165.6	29.2	19.2	16.	3.2	B.	7.45	12.	10.4	1.6	.068	.544	.316	.228	1.064	.584	.48	.014	.28	6.5	10.	......	+	2,000
6367	" 23	" 24	*	Much	M. F.3	"	267.6	189.2	78.4	30.8	28.	2.8	B.	8.4	12.7	6.2	6.5	.028	.48	.3	.18	1.	.68	.32	.015	.32	6.6	12.	......	?	12,750
6430	" 30	Dec. 1	*	Cons'd	M. F.2	"	242.	180.8	61.2	30.8	30.4	.4	B.	8.6	11.	10.2	.8	.108	.384	.204	.18	.904	.552	.352	.013	.36	5.6	9.	......	+	5,000
6473	Dec. 7	" 8	*	Much	M. F.15	"	217.2	176.	41.2	22.8	20.	2.8	B.	7.8	14.1	11.7	2.4	.144	.512	.288	.224	1.08	.648	.432	.007	.28	4.8	3.	......	?	3,500
6528	" 14	" 15	*	Cons'd	M. F.06	"	260.4	190.8	69.6	30.	30.	0.0	B.	7.9	13.8	10.	3.8	.016	.448	.268	.18	.92	.488	.432	.014	.36	4.6	2.	......	+	1,500
6563	" 21	" 22	*	"	M. F.03	"	257.2	194.8	62.4	15.2	14.	1.2	B.	9.1	12.	11.2	.8	.02	.432	.224	.208	.84	.488	.352	.016	.64	5.3	0.	......	+	13,400

TURBIDITY—*Decided. §Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish, Blk., Black. GB., Gray-Brown.

TABLE 34.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, EAST OF MIDSTREAM, JEFFERSON BARRACKS, MO.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of		Appearance.			Odor.	Residue on Evaporation.						Color on Igni-tion.	Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centi-meter.
	1899 Collec-tion.	1899 Exami-nation.	Turb'y.	Sedi-ment.	Color.		Total.	Dis-solved.	Sus-pended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd			Total.	By Dis-solved.	By Suspd Matter.	Free Am-monia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Total.	Dis-solved.	Sus-pended.	Nitrites.	Nitrates.					
5169	June 6	June 7	§	Much	M. F.25	None	2755.2	218.8	2536.4	82.	15.2	66.8	B.	4.3	44.2	9.	35.2	.044	1.6	.176	1.424	4.73	.54	4.19	.002	.52	....	....	......	....	74,000
5230	" 16	" 17	§	V.M'ch	VM.F.3	"	3736.4	288.	3448.4	136.8	26.	110.8	B.	4.8	35.2	6.5	28.7	.076	1.84	.192	1.648	5.08	.44	4.64	.007	.64	22.8	26.	......	....	16,000
5282	" 23	" 24	§	"	VM.F.15	"	3448.4	264.8	3183.6	110.	19.2	90.8	B.	4.6	30.1	7.5	22.6	.022	1.36	.192	1.168	4.28	.504	3.776	.003	.56	22.	28.	......	....	19,550
5318	" 29	" 30	§	"	VM.F.08	"	2054.4	219.6	1834.8	66.	31.6	34.4	B.	4.3	28.5	9.1	19.4	.02	.928	.112	.816	2.6	.344	2.256	.001	.56	20.5	26.	20.	....	10,350
5363	July 6	July 7	§	"	VM.F.07	"	2284.8	201.2	2083.6	59.6	24.	35.6	B.	4.8	30.6	12.5	18.1	.032	1.024	.176	.848	2.92	.536	2.384	.002	.48	22.9	26.	......	....	22,450
5414	" 14	" 15	§	"	VM.F.1	"	2122.8	195.6	2227.2	99.6	36.8	62.8	B.	3.8	44.7	9.6	35.1	.052	1.312	.192	1.12	3.4	.456	2.944	.01	.6	23.6	28.	......	....	7,850
5463	" 21	" 22	§	"	VM.F.07	"	2262.	170.8	2091.2	108.4	24.4	84.	B.	4.8	30.1	7.5	22.6	.028	.768	.208	.56	2.52	.296	2.224	.007	.44	19.8	28.	......	....	12,700
5506	" 27	" 28	§	"	VM.F.01	"	1822.8	196.8	1626.	71.2	25.2	46.	B.	5.	24.6	9.5	15.1	.02	.544	.16	.384	2.36	.408	1.952	.008	.36	16.2	30.	......	....	10,600
5557	Aug. 3	Aug. 4	§	"	VM.F.04	"	2207.6	196.	2011.6	86.	28.8	57.2	B.	5.4	25.7	9.4	16.3	.016	.672	.124	.548	2.2	.392	1.808	.008	.24	14.3	32.	......	+	16,550
5617	" 11	" 12	§	"	VM.F.03	"	1306.	146.	1160.	71.2	25.6	15.6	B.	1.5	22.8	10.7	12.1	.02	.704	.128	.576	1.72	.472	1.248	.02	.44	14.4	29.	......	+	30,800
5659	" 17	" 18	§	"	VM.F.05	"	1309.8	158.8	1151.0	116.	35.2	80.8	B.	5.8	19.5	7.	12.5	.028	.64	.096	.544	1.88	.36	1.52	.009	.4	13.9	29.	......	....	......
5721	" 25	" 26	§	"	VM.F.1	"	1063.2	182.4	880.8	50.8	22.8	28.	B.	6.2	19.3	6.	13.3	.02	.704	.11	.564	1.56	.344	1.216	.004	.4	8.4	30.	......	−	89,500
5765	" 31	Sept. 1	§	"	VM.F.03	"	921.8	213.6	711.2	35.2	23.2	12.	B.	6.2	14.	5.4	8.6	.036	.384	.124	.26	1.24	.392	.848	.001	.4	7.5	30.	......	....	46,000
5825	Sept. 8	" 9	*	Much	M. F.03	"	610.	197.6	412.4	31.8	15.6	19.2	B.	6.35	11.4	6.2	5.2	.02	.352	.128	.224	1.08	.344	.736	.004	.12	6.3	30.	......	+	126,500
5864	" 14	" 15	*	"	M. F.04	"	181.8	188.	296.8	25.2	21.	1.2	B.	5.7	12.7	5.4	7.3	.024	.384	.168	.216	1.32	.384	.936	.008	.2	6.8	22.	......	+	17,500
5921	" 22	" 23	*	"	M. F.03	"	451.6	201.8	246.8	37.2	19.2	18.	B.	7.9	12.3	7.3	5.	.008	.516	.156	.36	1.16	.44	.72	.005	.12	6.7	19.	......	+	16,000
5965	" 28	" 29	*	"	M. F.05	"	316.	176.8	169.2	24.4	15.6	8.8	B.	6.4	13.2	9.2	4.	.016	.448	.188	.26	1.22	.532	.688	.011	.16	5.3	17.	......	+	15,000
6017	Oct. 6	Oct. 7	*	Cons'd	M. F.04	"	312.8	171.8	138.	22.8	16.8	6.	B.	6.6	13.6	12.2	1.4	.032	.164	.132	.332	.9	.372	.528	.008	.2	4.1	16.	......	+	28,000
6057	" 12	" 13	*	"	M. F.1	"	333.6	187.2	146.1	21.2	11.4	6.8	B.	7.4	13.9	9.8	4.1	.032	.384	.216	.168	.92	.244	.676	.004	.2	3.5	20.	......	—	66,000
6114	" 19	" 20	*	"	M. F.04	"	368.	205.2	162.8	19.2	15.2	4	B.	8.9	12.	7.7	4.3	.04	.418	.176	.272	.92	.228	.692	.008	.2	3.2	19.	......	+	22,500
6173	" 26	" 27	*	"	M. F.04	"	369.6	200.4	169.2	29.2	16.8	12.4	B.	9.	8.9	7.7	1.2	.024	.416	.176	.24	.936	.28	.656	.005	.28	2.8	19.	......	+	18,000
6222	Nov. 3	Nov. 4	*	"	M. F.04	"	340.	208.	132.	26.	14.	12.	B.	8.9	9.6	8.5	1.1	.01	.384	.232	.152	.904	.28	.624	.012	.2	4.	9.	......	+	4,000
6263	" 11	" 13	*	Much	M. F.06	"	339.6	206.4	133.2	36.	28.8	7.2	B.	6.6	16.	8.9	7.1	.032	.432	.268	.164	1.	.68	.32	.013	.36	5.4	9.	......	+	8,000
6320	" 16	" 17	*	Cons'd	M. F.15	"	210.4	161.2	79.2	20.	16.8	3.2	B.	7.7	12.1	5.5	6.6	.028	.512	.228	.284	1.064	.488	.576	.012	.28	6.5	10.	......	+	6,250
6371	" 23	" 24	.	......	......	......	......	.....	......	.....	.....	.....	......	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.6	12.	......	+	15,000
6431	" 30	Dec. 1	*	Cons'd	M. F.2	None	271.6	182.8	88.8	34.4	21.	10.4	B.	8.	10.6	9.4	1.2	.1	.32	.272	.048	.904	.616	.288	.014	.32	5.6	9.	......	?	11,750
6474	Dec. 7	" 8	*	Much	M. F.15	"	239.6	184.8	54.8	23.6	18.8	4.8	B.	7.6	14.	11.8	2.2	.14	.528	.256	.272	1.128	.584	.544	.008	.56	4.8	3.	......	+	2,000
6529	" 14	" 15	*	Cons'd	M. F.04	"	261.6	199.6	62.	48.4	41.2	7.2	B.	8.1	13.8	10.9	2.9	.016	.432	.228	.204	.92	.584	.336	.012	.36	4.6	2.	......	+	1,125
6562	" 21	" 22	*	"	M. F.03	"	322.1	190.4	132.	13.6	11.6	2.	B.	9.8	13.1	10.6	2.5	.014	.48	.192	.288	1.	.456	.544	.012	.44	5.3	0.	......	+	21,600

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 35.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, JEFFERSON BARRACKS, MO.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4984	May 1	May 2	§	V. M'ch	VM. F.05	None	2489.6	222.	2267.6	114.	26.	88.	B.	3.2	27.7	6.8	20.9	.022	1.12	.176	.944	2.33	.37	1.96	.025	.65	....	....	.....	....	....
5044	" 16	" 17	§	"	VM. F.03	"	2112.	170.8	1941.2	60.	20.	40.	B.	3.8	23.2	6.7	16.5	.052	1.152	.192	.96	3.13	.49	2.64	.012	.61	....	....	.....	....	....
5045	" 16	" 17	§	"	VM. F.03	"	2134.8	196.4	1938.4	62.8	14.	48.8	B.	3.6	18.3	5.9	12.4	.056	1.152	.192	.96	3.13	.49	2.64	.012	.64	....	....	.....	....	....
5168	June 6	June 7	§	"	VM. F.1	"	3134.4	237.6	2896.8	76.4	20.	56.4	B.	4.4	45.3	10.	35.3	.036	2.	.24	1.76	4.73	.666	4.064	.004	.68	....	....	.....	....	58.500
5235	" 16	" 17	§	"	VM. F.15	"	3551.2	266.4	3284.8	112.4	38.8	73.6	B.	4.6	39.1	7.6	31.5	.028	1.68	.176	1.504	4.76	.472	4.288	.004	.64	22.8	26.	.....	....	12.000
5277	" 23	" 24	§	"	VM. F.15	"	3643.2	246.8	3396.4	96.	16.	80.	B.	4.6	28.3	6.8	21.5	.052	1.408	.208	1.2	4.6	.44	4.16	.006	.48	22.	28.	.....	....	87,750
5317	" 29	" 30	§	"	VM. F.05	"	2583.2	222.4	2360.8	43.6	12.	31.6	B.	3.9	30.1	8.9	21 2	.028	1.088	.112	.976	3.08	.344	2.736	.001	.52	20.5	26.	20.	....	6.150
5360	July 6	July 7	§	"	VM. F.06	"	2446.4	212.8	2233.6	73.2	35.2	38.	B.	4.45	30.2	10.6	19.6	.064	1.12	.16	.96	2.92	.376	2.544	.002	.52	22.9	26.	.....	....	2.000
5413	" 14	" 15	§	"	VM. F.1	"	2824.	199.6	2624.4	80.8	32.8	48.	B.	4.3	45.2	8.2	37.	.048	1.44	.176	1.264	3.64	.408	3.232	.01	.52	23 6	28.	.....	....	12.000
5461	" 21	" 22	§	"	VM. F.06	"	2491.2	183.6	2307.6	111.2	38.	73.2	B.	5.6	33.	7.2	25.8	.032	.864	.176	.688	2.76	.328	2.432	.007	.44	19.8	28.	.....	....	2.100
5507	" 27	" 28	§	"	VM. F.05	"	2078.8	185.2	1893.6	78.8	26.8	52.	B.	5.05	21.2	8.5	15.7	.02	.544	.16	.384	2.2	.382	1.818	.006	.44	16.2	30.	.....	....	11.750
5561	Aug. 3	Aug. 4	§	"	VM. F.02	"	2180.	208.	2272.	86.	18.8	67.2	B.	5.5	21.5	8.3	16.2	.016	.768	.156	.612	2.44	.44	2.	.005	.16	14.3	32.	.....	....	15,850
5620	" 11	" 12	§	"	VM. F.02	"	2100.8	166.	1934.8	102.4	24.8	77.6	B.	5.25	23.7	8.	15.7	.024	.768	.076	.692	2.2	.392	1.808	.009	.28	14.4	29.	.....	+	30.000
5658	" 17	" 18	§	"	VM. F.04	"	1650.8	182.4	1468.4	119.6	30.4	89.2	B.	6.2	22.9	6.8	16.1	.032	.736	.116	.62	2.04	.36	1.68	.007	.16	13.9	29.	.....	+	
5719	" 25	" 26	§	"	VM. F.06	"	1256.4	182.4	1074.	35.6	21.2	14.4	B.	8.	20.5	5.5	15.	.016	.8	.1	.7	1.88	.36	1.52	.004	.4	8.4	30.	.....	....	....
5761	" 31	Sept. 1	§	"	VM. F.07	"	1049.6	195.6	854.	56.8	18.4	38.4	B.	6.8	14.5	7.6	6.9	.028	.384	.116	.268	1.32	.264	1.056	.004	.28	7.5	30.	.....	+	29.000
5827	Sept. 8	" 9	*	Much	M. F.03	"	881.2	216.	665.2	39.2	11.8	24.4	B.	8.	12.3	5.6	6.7	.016	.4	.1	.3	1.16	.36	.8	.004	.32	6.3	30.	.....	+	44.900
5861	" 14	" 15	*	"	M. F.01	"	758.8	220.4	538.4	30.4	30.	.4	B.	7.65	13.5	5.1	8.4	.016	.416	.144	.272	1.24	.312	.928	.005	.28	6.8	22.	.....	+	28.500
5924	" 22	" 23	*	"	M. F.04	"	573.2	.....	......	34.8	....	....	B.	8.15	12.6	5.7	6.9	.006	.448	.144	.304	1.08	.36	.72	.004	.36	6.7	19.	.....	+	10.000
5966	" 28	" 29	*	"	M. F.05	"	503.6	213.2	290.4	21.4	17.6	6.8	B.	7.6	12.5	8.7	3.8	.02	.416	.168	.248	1.14	.468	.672	.009	.12	5.3	17.	.....	+	27.500
6022	Oct. 6	Oct. 7	*	"	M. F.01	"	516.8	225.6	291.2	22.8	16.8	6.	B.	9.8	13.8	9.3	4.5	.024	.432	.152	.28	1.028	.292	.736	.006	.12	4.1	16.	.....	+	9.150
6061	" 12	" 13	*	Cons'd	M. F.04	"	448.8	212.4	236.4	30.4	28.	2.4	B.	8.6	12.5	9.	3.5	.024	.352	.156	.196	.92	.196	.724	.005	.28	3.5	20.	.....	....	11.000
6115	" 19	" 20	*	"	M. F.03	"	513.6	238.	275.6	11.4	10.	4.4	B.	11.6	9.2	7.7	1.5	.024	.384	.156	.228	.84	.228	.612	.006	.2	3.2	19.	.....	+	7.500
6175	" 26	" 27	*	"	M. F.03	"	515.2	234.4	280.8	24.8	15.2	9.6	B.	11.3	8.5	6.3	2.2	.028	.368	.208	.16	.872	.376	.496	.007	.24	2.8	19.	.....	....	....
6225	Nov. 3	Nov. 4	*	"	M. F.05	"	457.2	245.2	212.	16.	13.2	2.8	B.	10.3	9.	7.4	1.6	.032	.352	.112	.24	.936	.264	.672	.011	2	4.	9.	.....	?	17.000
6265	" 11	" 13	*	Much	M. F.06	"	352.8	198.8	154.	33.6	28.	5.6	B.	7.25	12.1	9.2	2.9	.032	.48	.236	.244	1.096	.488	.608	.009	.36	5.4	9.	.....	+	6.500
6322	" 16	" 17	*	Cons'd	M. F.2	"	257.6	154.4	103.2	24.	11.6	12.4	B.	7.35	11.9	10.8	1.1	.024	.528	.32	.208	.776	.52	.256	.015	.28	6.5	10.	.....	+	2.000
6369	" 23	" 24	*	Much	M. F.25	"	329.6	182.4	147.2	35.2	31.6	3.6	B.	7.55	14.8	11.6	3.2	.052	.4	.216	.184	1.16	.552	.608	.008	.36	6.6	12.	.....	+	4.000
6427	" 30	Dec. 1	*	Cons'd	M. F.04	"	420.8	224.4	196.4	28.	16.4	11.6	B.	10.5	10.2	8.2	2.	.06	.336	.2	.136	.936	.36	.576	.009	.24	5.6	9.	.....	+	20,500
6477	Dec. 7	" 8	*	Much	M. F.15	"	261.6	192.4	69.2	21.6	18.	3.6	B.	7.8	14.	12.9	1.1	.02	.48	.352	.128	1.16	.616	.544	.007	.28	4.8	3.	.....	+	25,000
6525	" 14	" 15	*	Cons'd	M. F.04	"	393.2	213.6	179.6	25.6	20.8	4.8	B.	10.1	12.9	8.9	4.	.02	.448	.216	.232	1.	.328	.672	.01	.32	4.6	2.	.....	+	3,250
6564	" 21	" 22	*	"	M. F.03	"	473.2	225.2	218.	28.8	16.	12.8	B.	12.2	12.9	8.2	4.7	.032	.368	.208	.16	.76	.36	.4	.011	.32	5.3	0.	.....	+	5,375

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 36.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION

SOURCE OF WATER—MISSISSIPPI RIVER, WEST OF MIDSTREAM, JEFFERSON BARRACKS, MO.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dis-solved.	Organic Nitrogen: Sus-pended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5167	June 6	June 7	§	V.M'ch	M.F.1	None	3453.2	212.4	3210.8	106.	17.2	88.8	B.	4.35	46.2	8.7	37.5	.02	2.08	.176	1.904	5.85	.44	5.41	.004	.68	23.5	26.	.....	....	39,000
5231	" 16	" 17	§	"	VM.F.1	"	3555.6	255.2	3300.4	98.8	27.2	71.6	B.	4.9	39.6	8.4	31.2	.028	1.76	.192	1.568	4.76	.472	4.288	.004	.6	22.8	26.	.....	....	36,000
5278	" 23	" 24	§	"	VM.F.1	"	3504.4	260.4	3244.	107.2	16.8	90.4	B.	4.6	29.2	7.4	21.8	.036	1.472	.192	1.28	4.12	.408	3.712	.01	.48	22.	28.	.....	....	18,970
5316	" 29	" 30	§	"	VM.F.04	"	2316.	219.6	2126.4	60.4	8.4	52.	B.	3.8	28.4	8.9	19.5	.02	.992	.124	.868	2.76	.376	2.384	.001	.6	20.5	26.	20.	....	127,450
5361	July 6	July 7	§	"	VM.F.05	"	2832.8	219.6	2613.2	85.2	26.8	58.4	B.	4.8	31.3	9.2	22.1	.032	1.28	.192	1.088	3.08	.408	2.672	.002	.6	22.9	26.	.....	....	1,900
5117	" 14	" 15	§	"	VM.F.1	"	2778.	186.	2592.	122.4	38.	84.4	B.	3.9	43.7	8.	35.7	.04	1.44	.176	1.264	3.72	.52	3.2	.004	.56	23.6	28.	.....	....	6,350
5164	" 21	" 22	§	"	VM.F.5	"	2183.6	200.1	2283.2	83.6	30.	53.6	B.	5.3	30.1	7.4	22.7	.044	1.056	.192	.864	3.	.382	2.618	.004	.52	19.8	28.	.....	....	3,500
5509	" 27	" 28	§	"	VM.F.05	"	2354.	180.8	2173.2	89.2	22.4	66.8	B.	5.4	23.4	7.7	15.7	.016	.736	.128	.608	2.52	.232	2.288	.007	.4	16.2	30.	30.	....	11,200
5560	Aug. 3	Aug. 4	§	"	VM.F.03	"	2800.4	224.8	2575.6	70.4	24.8	15.6	B.	5.5	24.9	8.3	16.6	.012	.704	.14	.564	2.68	.312	2.368	.008	.44	14.3	32.	.....	....	28,500
5618	" 11	" 12	§	"	VM.F.03	"	2409.2	178.4	2230.8	91.6	26.	65.6	B.	5.75	25.5	8.5	17.	.02	.8	.072	.728	2.76	.264	2.496	.005	.36	14.4	29.	.....	+	31,600
5657	" 17	" 18	§	"	VM.F.15	"	2061.6	178.8	1882.8	137.2	31.2	106.	B.	6.1	23.1	5.5	17.6	.04	.896	.14	.756	2.6	.328	2.272	.012	.24	13.9	29.	.....	....	....
5717	" 25	" 26	§	"	VM F.05	"	1121.6	185.2	1236.4	83.2	16.4	66.8	B.	9.	22.5	5.7	16.8	.016	.896	.122	.774	2.2	.248	1.952	.008	.4	8.4	30.	.....	+	118,000
5762	" 31	Sept. 1	§	"	VM.F.03	"	1111.2	198.	913.2	62.4	18.4	44.	B.	6.8	14.2	6.	8.2	.024	.416	.104	.312	1.4	.216	1.181	.008	.4	7.5	30.	.....	+	37,000
5823	Sept. 8	" 9	*	Much	M. F.03	"	895.6	215.6	680.	40.4	14.	26.4	B.	8.	12.7	5.9	6.8	.012	.384	.132	.252	1.24	.296	.914	.005	.24	6.3	30.	.....	+	87,000
5863	" 14	" 15	*	"	M. F.03	"	906.8	230.	676.8	33.2	20.4	12.8	B.	9.2	12.9	4.1	8.8	.024	.384	.132	.252	1.44	.248	1.192	.008	.21	6.8	22.	.....	+	22,500
5923	" 22	" 23	*	"	M. F.03	"	789.2	167.6	621.6	25.2	14.	11.2	B.	9.95	12.8	4.3	8.5	.008	.384	.124	.26	1.16	.28	.88	.007	.2	6.7	19.	.....	+	46,000
5961	" 28	" 29	*	"	M. F.04	"	702.	247.2	451.8	28.8	11.6	17.2	B.	10.3	12.1	7.1	5.	.012	.514	.14	.401	1.3	.34	.96	.012	.21	5.3	17.	.....	+	13,000
6021	Oct. 6	Oct. 7	*	"	M. F.03	"	299.2	239.6	59.6	26.4	10.8	15.6	B.	13.1	13.	8.4	4.6	.028	.432	.108	.324	1.156	.276	.88	.007	.24	4.1	16.	.....	+	27,000
6059	" 12	" 13	*	Cons'd	M. F.03	"	618.	257.6	390.4	21.6	8.4	13.2	B.	13.1	11.5	8.7	2.8	.032	.32	.108	.212	.84	.161	.676	.009	.24	3.5	20.	.....	?	12,000
6112	" 19	" 20	*	"	M. F.03	"	597.6	261.2	336.4	12.4	6.4	6.	B.	14.6	11.6	8.	3.6	.036	.336	.092	.244	1.	.312	.688	.005	.36	3.2	19.	.....	....	93,500
6176	" 26	" 27	*	"	M. F.03	"	566.4	252.4	311.	26.8	14.4	12.4	B.	13.1	8.4	5.3	3.1	.021	.352	.152	.2	.872	.232	.61	.007	.21	2.8	19.	.....	?	20,500
6226	Nov. 3	Nov. 1	*	"	M. F.04	"	620.1	268.8	351.6	21.2	13.6	7.6	B.	12.	9.1	6.7	2.7	.014	.272	.1	.172	.904	.184	.72	.01	.2	4.	9.	.....	+	11,500
6267	" 11	" 13	*	Much	M. F.07	"	490.	259.2	230.8	30.8	26.8	4.	B.	11.	8.	6.8	1.2	.04	.368	.212	.156	.904	.488	.116	.011	.36	5.4	9.	.....	+	28,000
6321	" 16	" 17	*	Cons'd	M. F.02	"	281.6	167.2	111.4	20.	20.	....	B.	7.55	12.3	10.4	1.9	.024	.512	.284	.228	.81	.52	.32	.01	.32	6.5	10.	.....	+	3,750
6368	" 23	" 21	*	Much	M. F.03	"	580.4	244.8	335.6	39.2	24.8	14.4	B.	11.5	12.2	6.9	5.3	.036	.384	.141	.24	1.144	.264	.88	.012	.28	6.6	12.	.....	+	47,500
6428	" 30	Dec. 1	*	"	M. F.03	"	526.4	249.2	277.2	20.8	11.4	6.4	B.	13.	8.8	6.1	2.7	.018	.32	.14	.18	.936	.328	.608	.008	.21	5.6	9.	.....	+	38,750
6476	Dec. 7	" 8	*	"	M. F.04	"	576.	260.	316.	32.	20.8	11.2	B.	13.	14.2	5.7	5.5	.128	.4	.16	.21	.872	.424	.448	.005	.28	4.8	3.	.....	....	....
6526	" 14	" 15	*	Cons'd	M. F.02	"	531.6	218.8	282.8	22.	11.4	7.6	B.	13.2	12.4	....	....	.016	.1	.16	.21	.84	.456	.384	.008	1	1.6	2.	.....	?	7,875
6565	" 21	" 22	*	"	M. F.02	"	585.6	253.6	332.	19.6	17.6	2.	B.	14.6	12.9	7.8	5.1	.014	.32	.24	.08	.76	.392	.368	.009	.28	5.3	0.	.....	+	30,300

TURBIDITY—*Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 37.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 YARDS FROM MISSOURI SHORE, JEFFERSON BARRACKS, MO.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dis-solved.	Organic Nitrogen: Sus-pended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
4983	May 1	May 2	§	V.M'ch	V.M F.03	None	2680.	253.2	2426.8	90.4	20.	70.4	B.	4.8	29.5	6.2	23.3	.03	.92	.176	.744	2.17	.33	1.84	.04	.6	....	....	......	....	....
5166	June 6	June 7	§	Much	M. F.1	"	3593.6	258.8	3334.8	30.	11.	16.	B.	4.4	47.7	8.8	38.9	.076	2.08	.176	1.904	5.53	.57	4.96	.006	.4	....	....	......	....	72,500
5233	" 16	" 17	§	V.M'ch	V.M F.1	"	3605.2	277.2	3328.	62.	30.8	31.2	B.	4.6	40.	7.6	32.4	.081	1.92	.224	1.696	2.6	.472	2.128	.01	.68	22.8	26.	......	....	5,500
5279	" 23	" 24	§	"	V.M F.1	"	3445.6	262.8	3182.8	80.8	15.2	65.6	B.	4.6	29.5	7.5	22.	.036	1.36	.192	1.168	4.44	.472	3.968	.007	.48	22.	28.	......	....	19,700
5319	" 29	" 30	§	"	V.M F.04	"	2775.2	234.	2541.2	53.6	28.8	24.8	B.	4.8	29.5	8.3	21.2	.02	1.096	.096	1.	3.08	.36	2.72	.002	.56	20.5	26.	20.	....	36,850
5362	July 6	July 7	§	"	V.M F.05	"	2967.2	222.	2745.2	101.2	40.8	60.4	B.	4.8	32.2	8.8	23.4	.018	1.12	.176	.944	3.16	.92	2.24	.001	.52	22.9	26.	......	....	9,800
5416	" 14	" 15	§	"	V.M F.1	"	3001.2	193.2	2808.	136.8	35.2	101.6	B.	4.8	45.9	7.4	38.5	.036	1.632	.16	1.472	4.76	.392	4.368	.004	.6	23.6	28.	......	....	10,050
5465	" 21	" 22	§	"	V.M F.08	"	2827.6	189.6	2638.	111.2	26.	85.2	B.	5.8	31.9	6.6	25.3	.028	1.12	.192	.928	3.32	.314	2.976	.005	.48	19.8	28.	......	....	9,750
5510	" 27	" 28	§	"	V.M F.05	"	2312.8	201.6	2111.2	91.6	23.2	68.4	B.	5.45	21.3	7.3	17.	.012	.736	.192	.544	2.2	.248	1.952	.006	.44	16.2	30.	......	....	18,600
5559	Aug. 3	Aug. 4	§	"	V.M F.02	"	2849.6	216.4	2633.2	100.8	29.6	71.2	B.	5.8	25.7	6.9	18.8	.008	.768	.12	.648	2.76	.264	2.496	.008	.4	14.3	32.	......	+	11,600
5619	" 11	" 12	§	"	V.M F.03	"	2570.8	186.8	2384.	115.6	26.4	89.2	B.	5.8	26.9	8.2	18.7	.028	.768	.06	.708	2.36	.248	2.112	.005	.28	14.4	29.	......	+	36,400
5656	" 17	" 18	§	"	V.M F.2	"	2050.	172.8	1877.2	120.4	30.8	89.6	B.	7.1	23.4	5.3	18.1	.036	.864	.12	.744	2.6	.312	2.288	.013	.12	13.9	29.	......	....	....
5718	" 25	" 26	§	"	V.M F.04	"	1462.4	186.4	1276.	40.	16.	24.	B.	9.3	22.8	5.3	17.5	.02	.844	.1	.744	2.2	.312	1.888	.009	.4	8.4	30.	......	+	149,000
5763	" 31	Sept. 1	§	"	V.M F.02	"	1152.	200.4	951.6	46.4	16.	30.4	B.	7.	11.	5.7	8.3	.036	.416	.104	.312	1.4	.184	1.216	.007	.28	7.5	30.	......	....	55,500
5822	Sept. 8	" 9	*	Much	M. F.02	"	827.6	212.8	614.8	60.8	22.4	38.4	B.	7.2	12.3	5.9	6.4	.008	.352	.108	.244	1.16	.472	.688	.003	.2	6.3	30.	......	+	104,000
5862	" 14	" 15	*	"	M. F.02	"	941.2	235.6	705.6	26.	18.4	7.6	B.	9.55	12.8	3.6	9.2	.02	.384	.136	.248	1.44	.28	1.16	.008	.28	6.8	22.	......	+	49,500
5922	" 22	" 23	*	"	M. F.04	"	793.2	251.6	541.6	22.4	13.2	9.2	B.	10.4	12.5	4.1	8.4	.008	.352	.1	.252	1.08	.28	.8	.008	.28	6.7	19.	......	+	71,000
5963	" 28	" 29	*	"	M. F.01	"	696.8	238.8	458.	36.8	18.8	18.	B.	10.8	12.3	6.9	5.4	.016	.352	.12	.232	1.06	.324	.736	.01	.2	5.3	17.	......	+	16,000
6020	Oct. 6	Oct. 7	*	"	M. F.03	"	266.	258.8	7.2	18.8	10.8	8.	B.	12.8	12.1	7.7	4.4	.032	.448	.156	.292	1.028	.26	.768	.008	.04	4.1	16.	......	+	24,000
6060	" 12	" 13	*	Cons'd	M. F.03	"	619.2	260.4	388.8	24.	18.4	5.6	B.	12.2	12.3	9.3	3.	.028	.336	.108	.228	.84	.18	.66	.006	.2	3.5	20.	......	+	59,500
6113	" 19	" 20	*	"	M. F.02	"	611.2	252.	359.2	19.2	10.4	8.8	B.	13.2	11.7	7.9	3.8	.044	.352	.092	.26	.92	.312	.608	.006	.24	3.2	19.	......	+	82,000
6174	" 26	" 27	*	"	M. F.03	"	596.	261.6	334.4	28.8	16.4	12.4	B.	13.5	8.1	5.1	3.	.016	.368	.184	.184	.936	.28	.656	.006	.28	2.8	19.	......	+	46,000
6224	Nov. 3	Nov. 4	*	"	M. F.03	"	616.8	278.8	338.	29.2	28.8	.4	B.	13.6	8.5	6.1	2.4	.048	.352	.112	.24	.936	.328	.608	.012	.32	4.	9.	......	+	10,000
6266	" 11	" 13	*	Much	M. F.05	"	509.2	280.8	228.4	40.	33.2	6.8	B.	15.4	7.9	7.7	.2	.036	.352	.196	.156	.904	.36	.544	.008	.24	5.4	9.	......	+	27,000
6323	" 16	" 17	*	Cons'd	M. F.06	"	490.8	263.6	227.2	13.2	12.4	.8	B.	20.2	8.8	7.1	1.7	.018	.32	.188	.132	.68	.36	.32	.005	.36	6.5	10.	......	+	2,750
6370	" 23	" 24	*	Much	M. F.03	"	618.	260.4	357.6	22.4	15.2	7.2	B.	12.9	11.8	7.6	4.2	.036	.304	.12	.184	.872	.36	.512	.01	.32	6.6	12.	......	+	50,500
6426	" 30	Dec. 1	*	Cons'd	M. F.03	"	558.8	259.2	299.6	28.	11.2	16.8	G.	13.8	10.3	6.1	4.2	.044	.304	.144	.16	.904	.36	.544	.008	.24	5.6	9.	......	....	....
6475	Dec. 7	" 8	*	Much	M. F.15	"	622.4	271.6	350.8	37.6	20.8	16.8	B.	14.15	10.1	5.6	4.5	.148	.4	.208	.192	1.	.424	.576	.004	.44	4.8	3.	......	?	13,750
6527	" 11	" 15	*	Cons'd	M. F.02	"	604.4	261.2	343.2	24.4	18.	6.1	G.	14.6	6.1	6.1	....	.048	.352	.12	.232	.84	.392	.448	.014	.28	4.6	2.	......	+	12,500
6566	" 21	" 22	*	"	M. F.03	"	646.4	273.2	373.2	25.6	23.6	2.	BG.	6.35	12.3	6.2	6.1	.068	.384	.096	.288	1.	.296	.704	.008	.36	5.3	0.	......	+	22,800

TURBIDITY—*Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 38.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ST. LOUIS, MO., TAP WATER.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dis-solved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dis-solved.	Organic Nitrogen. Sus-pended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
5171	June 6	June 7	*	Cons'd	M. F.7	None	406.4	201.8	201.6	18.8	16.4	2.4	B.	4.5	11.3	7.5	3.8	.016	.384	.176	.208	.922	.474	.448	.001	.64	31.8	25.	26.	....	52,500
5232	" 16	" 1.	§	V.M'ch	M. F.5	"	382.	243.2	138.8	39.2	36.8	2.4	B.	5.3	11.1	7.5	3.6	.016	.32	.192	.128	.92	.44	.48	.007	.48	....	26.	......	....	2,000
5280	" 23	" 24	*	Cons'd	M. F.3	"	403.6	247.6	156.	22.8	22.	.8	B.	4.1	8.6	5.8	2.8	.02	.48	.16	.32	.824	.376	.448	.003	.48	22.	24.	......	....	2,160
5321	" 29	" 30	§	"	M. F.15	"	512.4	236.	276.4	26.4	24.4	2.	Blk.	4.	13.	8.1	4.9	.024	.32	.112	.208	.92	.392	.528	.001	.48	....	26.	20.	....	910
5364	July 6	July 7	§	Much	M. F.1	"	447.2	229.2	218.	39.6	30.8	8.8	B.	4.7	16.8	10.4	6.4	.02	.272	.192	.08	.92	.312	.608	.002	.56	22.9	26.	......	....	1,065
5418	" 14	" 15	*	Cons'd	M. F.15	"	483.2	208.8	274.4	59.6	46.4	13.2	B.	4.8	11.	7.8	3.2	.012	.224	.176	.018	.84	.392	.448	.003	.52	23.6	28.	......	....	1,180
5466	" 21	" 22	*	....	....	"	......	.....	.....	.....	.....	....	......	.....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	....	19.8	28.	......	....	....
5511	" 27	" 28	*	Cons'd	F.4	"	338.8	208.4	130.4	42.	29.4	12.6	B.	4.75	8.8	7.6	1.2	.012	.192	.144	.048	.792	.392	.4	.005	.48	16 2	....	......	....	770
5562	Aug. 3	Aug 4	*	"	M. F.06	"	326.8	208.4	118.4	29.6	26.8	2.8	B.	5.4	9.6	8.	1.6	.02	.114	.112	.032	.76	.408	.352	.005	.32	....	....	......	+	910
5621	" 11	" 12	*	Little	M. F.03	"	253.2	199.6	53.6	46.4	30.4	16.	B.	6.3	5.5	....	....	.02	.096	.096	.000	.44	.344	.096	.004	.24	....	....	......	—	710
5661	" 17	" 18	§	V.M'ch	M. F.25	"	313.6	169.2	144.4	52.4	36.8	15.6	B.	5.6	6.5	....	....	.02	.16	.096	.064	.52	.382	.138	.009	.44	....	....	......	....	....
5722	" 25	" 26	*	Cons'd	M. F.13	"	303.2	176.8	126.4	26.	23.2	2.8	B.	6.2	6.7	5.	1.7	.012	.176	.108	.068	.76	.312	.448	.004	.4	....	....	......		16,000
5766	" 31	Sept. 1	*	"	M. F.15	"	260.	199.6	60.4	25 2	24.	1.2	B.	7.2	6.5	4.7	1.8	.032	.144	.088	.056	.472	.312	.16	.002	.44	....	....	......	....	....
5824	Sept 8	" 9	*	Much	M. F.06	"	287.2	202.8	84.4	28.8	15.6	13.2	B.	7.	5.8	5.2	.6	.012	.128	.104	.024	.408	.264	.144	.003	.24	....	....	......	—	840
5865	" 14	" 15	*	"	M. F.04	"	254.4	226.	28.4	15.2	13.2	2.	B.	8.	4.7	4.3	.4	.016	.16	.12	.04	.52	.232	.288	.005	3	....	....	......	—	2,380
5920	" 22	" 23	*	"	M. F.05	"	296.	247.2	48.8	16.2	11.6	4.6	B.	9.45	5.2	3 9	1.3	.001	.128	.076	.052	.344	.28	.064	.004	.2	....	....	......	....	....
5968	" 28	" 29	*	Cons'd	M. F.06	"	314.	248.	66.	30.	15.6	14.4	GB.	9.8	4.9	4.2	.7	.012	.144	.1	.044	.548	.356	.192	.008	.32	....	....	......	+	2,750
6019	Oct. 6	Oct. 7	*	Much	M. F.03	"	282.4	252.4	30.	8.8	6.	2.8	B.	11.3	6.4	5.9	.5	.016	.114	.116	.028	.472	.308	.164	.007	.08	....	....	......	—	1,320
6056	" 12	" 13	*	Little	M. F.5	"	294.8	273.2	21.6	16	15.6	.4	B.	13 2	5.4	5.2	.2	.016	.176	.1	.076	.328	.12	.208	.004	.24	....	....	......	—	2,500
6117	" 19	" 20	+	"	M. F.03	"	319.6	270.4	49.2	10.	8.8	1.2	B.	14 1	4.8	4.5	.3	.032	.128	.08	.048	.392	.2	.192	.007	.28	....	....	......	....	....
6172	" 26	" 27	*	Cons'd	M. F.03	"	333.6	276.4	57.2	14.	11 6	2.4	B.	14.9	4.8	4.5	.3	.016	.208	.132	.076	.392	.28	.112	.003	.32	....	....	......	—	1,310
6227	Nov. 3	Nov. 4	+	Little	M. F.02	"	325.6	297.6	28.	12.4	10.4	2.	G.	14.5	4.2	4.1	.1	.02	.128	.072	.056	.248	.152	.096	.008	.32	....	....	......	+	1,560
6268	" 11	" 13	+	"	M. F.04	"	284.	......	......	.....	.....	...	......	14.7	4.9	4.5	.4	.024	.176	.148	.028	.552	.328	.224	.007	.24	....	....	......	—	1,000
6324	" 16	" 17	+	"	M. F.03	"	314.8	268.8	46.	11.2	8.8	2.4	B.	16.1	5.7	5.1	.6	.012	.128	.12	.008	.424	.328	.096	.003	.28	....	....	......	+	1,950
6366	" 23	" 24	+	"	M. F.05	"	466.8	291.2	175.6	28.4	19.6	8.8	B.	15 8	6 1	6.	.1	.028	.144	.136	.008	.36	.296	.064	.008	.2	....	....	......	+	2,750
6429	" 30	Dec. 1	+	"	M. F.04	"	290.4	258.4	32.	13 6	12.4	1.2	B.	13.9	5 7	5.2	.5	.028	.176	.16	.016	.552	.328	.224	.004	.2	....	....	......	+	34,500
6478	Dec. 7	" 8	*	Much	M. F.20	"	295.2	270	25.2	14.	11.6	2.4	B.	15.9	5.2	5.1	.1	.108	.192	.176	.016	.52	.488	.032	.004	.28	....	....	......	+	1,800
6530	" 14	" 15	+	Little	M. F.03	"	300.8	271 2	29.6	15.6	14.	1.6	B.	11.4	6.	5.9	.1	.012	.12	.108	.012	.392	.264	.128	.007	.28	....	....	......	+	4,050
6567	" 21	" 22	*	Cons'd	M. F.02	"	318.8	280.	38.8	18.	17.6	.4	G.	15.75	6.7	6.1	.3	.028	.128	.096	.032	.44	.296	.144	.006	.32	....	....	......	—	1,450

TURBIDITY—*Decided. §Very Decided. + Distinct. ‡ Very Slight. | Slight.

COLOR M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White. Gh., Grayish. Blk., Black. GB., Gray-Brown.

TABLE 39.

STREAMS EXAMINATION — CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS — PARTS PER MILLION.

SOURCE OF WATER — SANITARY CANAL, KEDZIE AVENUE.

Report of ARTHUR W. PALMER.
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6666	Jan. 11	Jan. 12	*	Much	M. F.3	Gas'y	466.	226.8	239.2	41.2	26.	15.2	B.	24.	21.3	10.6	10.7	3.2	1.44	.384	1.056	2.88	.768	2.112	....	.16	....	....	......	....	....
7431	Apl. 30	May 1	+	Cons'd	M. F.03	"	244.	235.2	8.8	13.2	12.8	.4	B.	22.	13.2	7.4	5.8	2.72	1.12	.288	.832	2.16	.68	1.48	.038	.28	....	3.	8.	+	2,025.000
7477	May 8	" 9	*	Much	M. F.30	"	403.2	244.4	158.8	31.2	30.4	.8	B.	23.	22.1	9.	13.1	1.92	1.12	.384	.736	3.14	.84	2.3	.15	1.4	....	8.	15.	+	3,150,000
7523	" 14	" 15	+	Little	M. F.01	M'sty	199.6	161.6	38.	19.6	17.6	2.	G.	11.	7.8	5.	2.8	.8	.352	.192	.16	2.5	.452	2.048	.015	.16	....	13.	20.	+	200,000
7577	" 21	" 22	+	"	M. F.01	Oily	217.2	182.4	34.8	27.2	22.4	4.8	B.	16.5	11.5	7.	4.5	1.6	.8	.448	.352	.996	.516	.48	.023	.32	....	3.	9.5	+	825,000
7615	" 28	" 29	+	Cons'd	M. F.06	Gas'y	213.2	150.8	62.4	33.2	24.	9.2	B.	11.	13.1	6.1	7.	.688	.512	.224	.288	1.16	.452	.708	.016	.24	....	8.	13.	....	1,170,000
7648	June 4	June 5	+	"	M. F.04	"	205.2	169.6	35.6	36.4	22.8	13.6	B.	12.	9.9	4.6	5.3	.88	.432	.24	.192	.84	.42	.42	.01	.2	....	9.	14.5	+	280,000
7706	" 11	" 12	+	Little	M. F.02	......	198.4	191.6	6.8	30.	29.6	.4	B.	14.	7.	5.3	1.7	1.52	.288	.24	.048	.8	.42	.38	.01	.4	....	15.5	19.	....	135,000
7733	" 18	" 19	*	"	M. F.05	M'sty	198.	171.6	26.4	19.2	15.6	3.6	B.	10.	6.6	5.8	.8	1.01	.416	.128	.288	.58	.34	.24	.005	.24	....	12.	18.	+	750,000
7774	" 25	" 26	‡	"	T. F.03	"	212.8	170.4	42.4	26.8	20.4	6.4	B.	10.	7.3	4.3	3.	.56	.288	.096	.192	1.54	.308	1.232	.011	.16	....	21.	25.	?	345,000
7851	July 6	July 7	‖	Slight	F.02	"	223.2	202.8	20.4	22.8	20.8	2.	B.	14.5	8.8	4.	4.8	1 04	.448	.176	.272	1.156	.228	.928	.012	.12	....	17.	......	?	70,000
7884	" 9	" 10	*	Little	T. F.03	......	211.6	184.4	27.2	19.2	15.2	4.	B.	13.	8.	5.3	2.7	.92	.352	.208	.144	.548	.276	.272	.019	.12	..	....	......	....	....
7908	" 11	" 12	*	"	T. F.02	Gas'y	197.6	157.6	40.	24.4	14.	10.4	B.	12.	10.9	5.6	5.3	.23	.272	.176	.096	.776	.292	.484	.012	.12	....	....	......	....	....
7924	" 13	" 14	+	"	F.01	"	188.4	162.4	26.	26.	8.4	17.6	B.	11.	6.7	4.8	1.9	1.01	.272	.16	.112	.84	.66	.18	.008	.12	....	....	......	....	....
7932	" 16	" 17	‡	"	T. F.02	"	183.2	163.6	19.6	12.	11.6	.4	B.	10.5	5.7	3.9	1.8	2.32	.272	.112	.16	.9	.372	.528	.009	.24	....	15.	......	....	550,000
7969	" 18	" 19	*	Much	M. F.02	"	194.8	161.2	33.6	18.	6.4	11.6	B.	12.	7.3	4.5	2.8	1.	.24	.144	.096	.68	.42	.26	.011	.04	....	13.	......	....	3,600,000
7992	" 20	" 21	*	Little	T. F.02	"	190.	156.	34.	37.6	9.6	28.	B.	11.	6.5	4.3	2.2	.88	.304	.128	.176	.76	.5	.26	.012	.12	....	14.	......	....	1,165.000
8002	" 23	" 24	+	"	T. F.01	"	176.8	161.2	15.6	19.2	9.6	9.6	G.	10.	6.2	3.8	2.4	.88	.24	.112	.128	.76	.456	.304	.009	.36	....	16.	......	....	970,000
8024	" 25	" 26	+	"	T. F.02	"	252.	.....	.....	38.4	.....	....	......	23.	11.5	5.8	5.7	1.88	.688	.176	.512	.156	.92	.64	.038	.4	....	....	......	....	....
8037	" 27	" 28	*	"	T. F.01	"	226.	172.	54.	34.4	24.	10.4	B.	13.	11.8	5.4	6.4	1.68	.512	.128	.384	.124	.44	.8	.014	.2	....	13.	......	....	530,000
8055	" 30	" 31	*	"	T. F.01	"	174.8	158.4	16.4	20.4	19.6	.8	B.	10.5	6.3	5.2	1.1	1.04	.352	.176	.176	.68	.48	.2	.013	.2	....	11.	......	....	195,000
8070	Aug. 1	Aug. 2	*	"	T. F.01	"	192.4	158.8	33.6	23.2	20.8	2.4	G.	13.	6.9	4.2	2.7	1.48	.416	.104	.312	1.08	.52	.56	.017	.24	....	15.	......	....	2,110,000
8093	" 3	" 4	*	"	T. F.01	"	197.6	172.8	24.8	21.	24.	....	B.	11.	7.1	4.	3.1	1.04	.304	.16	.144	1.	.44	.56	.005	.12	....	14.	......	....	1,760,000
8098	" 6	" 7	+	V Little	T. F.01	"	173.2	145.6	27.6	30.	8.	22.	B.	12.	6.4	3.7	2.7	1.16	.342	.176	.166	.92	.328	.592	.005	.16	....	19.	......	....	965,000
8115	" 8	" 9	*	Little	T. F.01	"	183 6	166.4	17.2	29.6	28.4	1.2	G.	12.	7.4	4.	3.4	1.04	.336	.16	.176	1.064	.354	.710	.007	.28	....	16.5	......	....	1,615,000
8152	" 10	" 11	*	"	T. F.01	"	140.	115.2	24 8	40.4	39.2	1.2	B.	13.	11.6	4.3	7.3	1.36	.352	.176	.176	1.08	.316	.764	.009	.16	....	17.	......	....	810,000
8167	" 13	" 14	*	"	T. F.01	"	171.6	148.4	22.2	26.	22.8	3.2	G.	11.	6.1	3.6	2.5	.8	.304	.16	.144	.68	.28	.40	.007	.28	....	18.	......	....	4,200,000
8172	" 15	" 16	*	"	T. F.01	"	214.8	161.2	53.6	32.8	31.2	1.6	G.	16.5	13.1	4.7	8.4	1.76	.512	.176	.336	1.224	.28	.944	.028	.44	....	15.5	......	....	530,000
8200	" 17	" 18	*	"	T. F.01	"	203.6	158.	45.6	25.2	18.4	6.8	G.	12.	8.2	4.1	4.1	.56	.368	.24	.128	.776	.28	.496	.011	.56	....	15.	......	....	150,000
8229	" 20	" 21	*	"	T. F.01	"	237.6	194.	43.6	35.2	15.2	20.	G.	20.	17.1	6.	11.1	1.76	.512	.176	.336	1.2	.316	.884	.028	.36	....	16.5	......	....	380,000
8257	" 22	" 23	*	"	T. F.02	"	208.4	169.6	38.8	22.8	9.6	13.2	G.	18.	8.6	4.	4.6	1.32	.432	.16	.272	.888	.172	.716	.013	.4	....	15.5	......	....	1,010,000
8280	" 24	" 25	*	"	T. F.02	"	227.2	189.2	38.	16.8	14.	2.8	G.	16.	9.	3.8	5.2	1.2	.368	.096	.272	.68	.188	.492	.04	.2	....	16.	......	....	1,820,000
8305	" 27	" 28	*	"	T. F.01	"	197.2	187.2	10.	18.4	17.6	.8	G.	13.	7.7	4.	3.4	.896	.352	.064	.288	.6	.228	.372	.014	.36	....	16.5	......	....	505,000
8318	" 29	" 30	*	"	T. F.	"	215.2	175.2	40.	23.6	12.8	10.8	B.	11.	8.2	4.1	4.1	.4	.208	.112	.096	.6	.3	.3	.009	.2	....	16.	......	....	220,000
8343	" 31	Sept. 1	+	"	M. F.02	"	190.4	165.6	24.8	22.4	21.6	.8	B.	11.	7.9	3.6	4.3	.608	.32	.208	.112	.636	.316	.32	.006	.24	....	15.	......	....	1,480,000
8356	Sept. 3	" 4	*	Cons'd	M. F.02	"	212.	170.8	41.2	16.	14.	2.	B.	11.	10.5	3.3	7.2	.88	.448	.096	.352	1.24	.364	.876	.01	.24	....	16.	......	....	160,000
8375	" 5	" 6	+	Cons'd	.03	"	180.4	154.	26.4	17.2	15.2	2.	DB.	13.	9.2	3.4	5.8	1.12	.352	.144	.208	.924	.204	.72	.017	.24	....	15.5	......	....	2,280,000
8414	" 7	" 8	‖	Little	F.02	"	220.8	206.4	14.4	20.8	13.2	7.6	B.	21.	11.5	3.7	7.8	2.16	.56	.096	.464	1.16	.496	.664	.001	.16	....	15.	......	....	1,970,000
8428	" 10	" 11	‖	"	F.1	"	196.8	179.6	17.2	19.6	17.6	2.	G.	13.	7.7	3.8	3.9	.128	.352	.112	.24	.86	.512	.348	.008	.36	....	14.	......	....	1,010,000
8452	" 12	" 13	+	"	F.02	M'sty	218.4	195.2	23.2	21.6	19.2	2.4	G.	19.	10.2	4.	6.2	1.76	.688	.272	.416	1.5	.416	1.084	.003	.12	....	15.	......	....	1,130,000
8473	" 14	" 17	+	"	M. F.01	Gas'y	262.8	219.6	43.2	32.4	13.2	19.2	B.	27.	14.4	5.8	8.6	3.44	1.12	.16	.96	2.22	.288	1.932	.004	.24	....	14.	......	....	1,175.000
8476	" 17	" 18	+	"	F.01	"	170.8	152.	18.8	20.8	14.8	6.	G.	9.	6.1	3.2	2.9	.544	.272	.112	.16	.588	.176	.412	.01	.32	....	15.5	......	....	260.000
8495	" 19	" 20	+	"	F.03	"	201.6	189.2	12.4	24.4	19.6	4.8	G.	17.	12.4	5.	7.4	.464	.768	.16	.608	1.8	.304	1.496	.007	.24	....	15	......	....	70.000
8520	" 21	" 22	+	"	M. F.2	"	307.6	268.4	39.2	38.4	28.	10.4	B.	31.	24.6	14.1	10.5	3.84	1.6	.256	1.344	3.24	.704	2.536	.002	.2	....	14.5	..	....	1,760,000
8528	" 24	" 25	+	"	M. F.02	"	216.8	188.4	28.4	34.8	29.6	5.2	B.	16.	9.8	3.6	6.2	1.211	.928	....	.....	1.42	.....	.....	.02	.16	....	14.5	......	....	410,000
8549	" 26	" 27	+	"	M. F.03	M'sty	206.8	171.2	35.6	31.2	16.8	14.4	G.	13.	8.4	4.2	4.2	.72	.752	...	.....	1.276	.352	.924	.014	.32	....	....	......	....	1,550,000
8567	" 28	" 29	+	"	M.	"	195.6	168.	27.6	21.	12.	12.	Bh.	12.	8.1	3.9	4.2	.656	.608	.176	.432	1.404	.416	.988	.009	.4	....	14.5	......	....	340,000
8587	Oct. 1	Oct. 2	+	"	M. F.04	Gas'y	202.	157.2	44.8	23.2	21.6	1.6	Bh.	9.	10.5	5.3	5.2	.752	.48	.192	.288	.832	.416	.416	.01	.32	...	15.	......	....	210.000
8607	" 3	" 4	+	"	C. F.03	M'sty	183.6	162.4	21.2	17.2	14.	3.2	B.	10.	11.4	5.7	3.7	1.216	.432	.256	.176	.864	.336	.528	.013	2.4	....	....	......	....	285,000
8623	" 5	" 6	‖	"	F.03	"	188.	154.8	23.2	21.4	22.	2.4	Bh.	10.	6.2	4.2	2.	.768	.384	.....	.....	.704	.16	.514	.007	.273	....	....	......	....	765,000
8642	" 8	" 9	‖	"	F.02	......	169.2	147.2	22.	18.	16.4	1.6	G.	8.	6.5	4.	2.5	.528	.352	.256	.096	.864	.236	.628	.009	.151	....	....	......	....	240,000

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight ‖ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White

TABLE 40.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, BRIDGEPORT.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Dis-solved.	Sus-pended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Igni-tion.	Chlorine.	Oxygen Consumed. Total.	By Dis-solved.	By Suspd Matter.	Nitrogen as Ammonia. Free Am-monia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Dis-solved.	Sus-pended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centi-meter.
6600	Jan. 2	Jan. 3	*	Cons'd	M. F.30	Gas'y	458.	428.	30.	54.4	35.6	18.8	B.	92.2	34.8	19.8	15.	15.2	2.88	1.76	1.12	5.8	3.08	2.72	.004	.24	4.8	0.	.2	?	4,960,000
6642	" 7	" 9	*	"	M. F.3	"	444.8	412.	32.8	42.	34.4	7.6	G.	113.5	8.5	8.	.5	11.2	2.46	1.44	.72	4.52	1.88	2.64	.035	.28	5.	5.	4.4	+	860,000
6685	" 15	" 16	*	"	M. F.5	"	347.2	319.2	28.	42.4	38.8	3.6	G.	65.5	19.3	11.2	8.1	7.2	1.92	1.28	.64	3.36	2.08	1.28	.028	.28	4.	4.5	8.3	+	5,100,000
6732	" 22	" 23	*	"	M. F.3	"	520.4	472.4	48.	39.2	24.4	14.8	B.	136.	22.6	12.	10.6	13.2	2.16	1.52	.64	4.32	2.32	2.	.036	.32	4.6	0.	4.5	+	11,080,000
6774	" 29	" 30	*	Much	M. F.4	"	669.2	605.2	64.	52.	42	10.	B.	202.	23.9	21.	2.9	18.	3.6	2.8	8.8	7.04	4.88	2.16	.012	.2	2.5	0.	......	+	310,000
6834	Feb. 5	Feb. 7	*	Cons'd	M. F.37	"	406.	390.4	15.6	39.2	24.4	14.8	B.	102.	23.9	12.5	11.4	10.8	2.	.528	1.472	4.	1.184	2.816	.023	.2	4.5	....	2.	....	....
6891	" 11	" 14	*	"	M. F.	"	410.4	360.4	50.	36.8	20.8	16.	B.	88.5	18.2	8.	10.2	7.2	1.6	.592	1.008	4.08	1.088	2.992	.012	.08	4.8	0.	6.5	+	10,350,000
6929	" 19	" 20	*	Much	M. F.06	"	389.2	354.	35.2	48.4	28.	20.4	B.	90.	18.4	7.9	10.2	7.36	1.92	.752	1.168	1.48	1.92	2.56	.027	.2	4.2	6.5	0.	+	5,660,000
6981	" 26	" 27	+	Cons'd	M. F.20	"	382.4	365.6	16.8	47.6	35.2	12.4	G.	94.	18.5	12.5	6.	6.4	2.16	1.408	.752	4.16	2.56	1.6	.032	.44	3.6	4.5	2.	....	2,180,000
7016	Mar. 5	Mar. 6	†	"	M. F.20	"	302.	283.2	18.8	27.2	14.8	12.4	B.	56.5	14.	8.9	5.4	4.16	1.088	.688	.4	2.24	1.056	1.184	.02	.2	4.	0.	6.5	....	1,860,000
7065	" 12	" 13	*	Much	M. F.04	"	326.4	262.	64.4	26.	16.	10.	B.	38.	17.2	7.4	9.8	3.52	1.376	.288	1.088	2.8	.544	2.256	.085	.8	5.	0.	4.	....	3,550,000
7109	" 19	" 20	+	Cons'd	M. F.50	"	393.2	368.8	24.4	28.4	22.	6.4	B.	86.	18.6	10.9	7.7	7.2	2.16	1.184	.976	4.76	2.36	2.4	.175	.52	4.	8.	3.	....	3,550,000
7163	" 26	" 27	†	"	M. F.50	"	430.4	360.8	69.6	44.	26.	18.	B.	88.	21.5	13.7	7.8	8.8	2.24	.8	1.44	4.28	2.52	1.76	.22	.4	4.	11.	13.	....	8,000,000
7209	April 2	April 3	†	"	M. F.40	"	477.2	450.4	26.8	35.6	15.6	20.	B.	94.5	....	....	....	8.	1.76	.88	.88	4.28	2.36	1.92	.48	.36	4.	8.	11.	+	5,300,000
7264	" 9	" 10	†	"	M. F.30	"	576.4	517.6	28.8	43.2	20.8	22.4	B.	147.	24.2	12.2	12.	14.	1.6	.736	.864	3.48	2.12	1.36	.16	.36	3.	9.	14.	+	3,725,000
7318	" 16	" 17	†	"	M. F.25	"	390.4	284.4	106.	32.	27.2	4.8	B.	.....	18.3	10.7	7.6	8.8	1.6	.96	.64	3.16	1.4	1.76	.08	.36	4.5	12.	16.	+	11,200,000
7391	" 23	" 24	†	"	M. F.03	"	336.8	289.6	47.2	12.	10.8	1.2	B.	.....	12.7	6.7	6.	6.8	1.28	.432	.848	2.36	.984	1.376	.035	.32	4.	11.	13.	+	3,925,000
8109	Aug. 7	Aug. 8	*	Little	T.	"	500.4	469.6	30.8	45.	38.8	6.2	B.	148.5	47.1	7.4	9.7	17.6	1.468	.384	.784	2.6	.872	1.728	.002	.36	....	20.	......	....	660,000
8129	" 8	" 9	*	"	T.	"	441.2	380.	61.2	42.	27.6	14.4	B.	117.5	15.8	9.	6.8	12.	1.152	.288	.864	2.36	.626	1.644	...	.28	....	17.	......	....	2,140,000
8151	" 10	" 11	*	"	T.	"	494.2	400.4	93.8	47.2	36.4	10.8	B.	164.	20.4	7.8	12.6	17.6	1.184	.384	.8	2.52	.78	1.74	....	.2	....	....	......	....	....
8165	" 13	" 14	*	"	T.	"	296.	256.4	39.6	36	33.2	2.8	B.	62.	14.3	5.4	8.9	8.1	.864	.476	.688	1.72	.316	1.404	.018	.4	....	4.8	......	+	3,900,000
8227	" 20	" 21	*	"	T. F.01	"	498.	472.4	25.6	41.6	23.2	18.4	B.	156.	18.4	7.9	10.5	15.6	1.504	.416	1.088	3.	.508	2.492	....	.2	....	17.	......	+	210,000
8298	" 27	" 28	*	"	M. F.02	"	462.	435.2	26.8	28	26.8	1.2	B.	127.	14.8	8.1	6.7	6.4	.896	.314	.582	2.52	.572	1.948	.013	.24	....	17.	......	?	90,000
8255	Sept. 3	Sept. 4	*	Cons'd	M. F.15	"	673.6	602.	71.6	46.4	29.6	16.8	DB.	233.	24.7	11.5	10.2	25.6	1.36	.352	1.008	3.16	.604	2.556	.001	.16	....	16.5	......	+	125,000
8420	" 10	" 11	+	"	F.04	M'sty	435.6	432.	3.6	26.8	16.	10.8	B.	132.	14.	6.1	7.9	1.48	.896	.301	.592	1.71	.528	1.212	.001	.24	...	14.	......	—	680,000
8477	" 17	" 18	†	Little	F.01	Gas'y	206.	169.2	36.8	24.8	15.6	9.2	G.	14.	9.1	3.5	5.6	1.28	.196	.08	.116	.956	.384	.572	.014	.24	...	15.5	......	—	110,000
8529	" 24	" 25	*	Cons'd	M. F.4	"	845.2	768.4	76.8	77.6	42.	35.6	DB.	283.	29.	17.4	11.6	30.4	2.64	.464	2.176	1.92	.....	.....	.001	.24	...	13.	......	+	1,610,000
8586	Oct. 1	Oct. 2	†	Little	M. F.45	"	447.6	406.8	40.8	32.	22.8	9.2	Bh.	135.	16.6	8.8	7.8	12.8	1.216	.496	.72	2.864	1.181	1.68	.002	.24	...	13.	......	+	2,515,000

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. † Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White

TABLE 41.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, LOCKPORT.

Report of ARTHUR W. PALMER.
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6608	Jan. 2	Jan. 3	*	Cons'd	M. F.5	Gas'y	513.6	444.4	69.2	59.6	39.2	20.4	B.	107.	31.3	22.8	11.5	10.4	3.36	2.08	1.28	8.52	4.84	3.68	.002	.64	....	0.	......	+	1,100,000
6613	" 8	" 9	*	"	M. F.4	"	410.4	376.4	64.	43.6	28.8	14.8	G.	90.	21.1	14.8	6.3	10.4	2.48	1.04	1.44	4.84	2.44	2.4	.001	.24	....	0.	......	+	3,980,000
6688	" 15	" 16	*	"	M. F.5	"	535.6	468.	67.6	60.4	21.6	38.8	B.	134.	24.6	17.2	7.4	12.8	3.36	2.16	1.2	6.4	3.36	3.01	.001	.2	....	4.5	......	+	510,000
6738	" 22	" 24	*	"	M. F.5	"	458.	439.	19.	42.8	31.6	11.2	B.	108.	20.6	11.6	9.	9.6	2.24	1.04	1.2	5.28	1.68	3.6	.015	.2	....	4.5	......	+	5,400,000
6780	" 29	" 30	*	"	M. F.25	"	515.2	230.	315.2	55.6	25.6	30.	G.	151.	16.3	13.1	3.2	13.2	2.56	1.76	.8	4.8	2.24	2.56	.002	.2	....	0.	......	—	290,000
6841	Feb. 5	Feb. 6	*	"	M. F.6	"	372.	342.4	29.6	41.2	21.	17.2	B.	83.	18.9	10.6	8.3	6.4	1.92	.464	1.456	4.16	.992	3.168	.017	.16	....	....	— 9.5	....	....
7022	Mar. 5	Mar. 6	*	"	M. F.4	"	499.2	431.6	67.6	44.4	28.	16.4	B.	113.	21.7	11.9	9.8	10.4	3.36	1.76	1.6	7 04	4.	3.04	.014	.36	....	0.	—12.	....	1,870,000
7069	" 12	" 13	*	"	M. F.3	"	369.2	255.6	113.6	12.8	38.	4.8	B.	58.8	22.	9.4	12.6	15.76	1.84	.64	1.2	4.64	1.184	3.456	.075	.84	....	0.	3.5	....	9,450,000
7117	" 19	" 20	*	"	M. F.4	"	434.	384.4	49.6	33.2	32.8	.4	B.	78.4	21.9	11.8	10.1	6.4	2.4	1.216	1.184	4.76	2.52	2.24	.15	.72	....	?	......	+	2,600,000
7165	" 26	" 27	*	"	M. F.3	"	399.6	372.	27.6	39.2	32.4	6.8	B.	73.2	18.8	11.1	7.7	7.2	1.92	1.024	.896	4.44	2.6	1.84	.17	.4	....	0.	......	....	3,700,000
7217	Apr. 2	Apr. 3	*	"	M. F.50	"	526.	497.2	28.8	35.2	24.	11.2	B.	130.5	22.5	11.3	11.2	11.2	2.88	1.28	1.6	5.24	2.52	2.72	.002	.2	....	0.	3.5	....	8,000,000
7272	" 9	" 10	†	Little	M. F.50	......	643.6	632.8	10.8	50.	45.2	4.8	B.	175.	22.4	14.9	7.5	13.6	2.64	1.68	.96	5.24	3.32	1.92	.003	.12	....	9.5	1.5	+	1,490,000
7328	" 16	" 17	*	Cons'd	M. F.40	......	509.6	482.	27.6	24.8	18.4	6.4	B.	117.	18.	11.2	6.8	10.8	1.6	.704	.896	3.48	1.368	2.112	.004	.24	....	8.	22.	+	2,925,000
7398	" 23	" 24	*	Much	M. F.04	Gas'y	571.6	522.8	48.8	38.	32.8	5.2	B.	119.8	21.4	10.7	10.7	14.4	2.16	.688	1.472	3.48	1.72	1.76	.004	.2	....	12.	21.	+	3,150,000
7438	May 1	May 1	*	Cons'd	M. F.15	"	360.4	271.2	89.2	32.	19.2	12.8	B	53.	18.7	7.9	10.8	5.92	1.36	.432	.928	3.14	1.11	2.	.003	.2	....	15.5	25.	+	2,050,000
7480	" 8	" 9	*	"	M. F.30	......	457.2	372.	85.2	28.4	28.	.4	B.	101.	18.8	9.3	9.5	11.2	1.36	.704	.656	2.98	1.14	1.84	.003	.24	....	14.5	23.5	+	915,000
7533	" 15	" 16	..	....	....	M'sty	425.2	397.6	27.6	36.4	21.2	15.2	B.	88.	16.6	9.1	7.5	7.2	2.24	.64	1.6	3.14	.74	2.4	.004	.12	....	20.	27.5	....	2,050,000
7587	" 22	" 23	*	Cons'd	M. F.1	Gas'y	462.4	448.	14.4	29.6	26.4	3.2	B.	120.	16.5	11.2	5.3	15.2	1.472	.528	.944	2.18	.8	1.38	.003	.08	....	15.5	26.5	+	1,465,000
7623	....	" 30	*	"	M. F.20	"	505.2	496.8	8.4	37.2	35.6	1.6	B.	152.5	20.6	11.4	9.2	21.48	1.28	.736	.544	2.18	1.22	.96	.02	.4	...	19.	20.5	+	1,765,000
7654	....	June 5	*	"	M. F.50	"	579.2	539.6	39.6	52.	39.6	12.4	G.	165.5	17.4	10.8	6.6	19.2	1.44	.418	.992	2.9	1.86	1.04	....	.24	...	18.	25.5	+	280,000
7703	....	" 13	*	"	M. F.30	"	467.2	440.8	26.4	14.4	29.2	15.2	B.	107.	17.2	8.2	9.	12.4	1.36	.448	.912	2.74	1.6	1.14	.011	.2	....	18.	22.	+	2,215,000
7739	....	" 19	*	"	M. F.2	"	666.8	640.4	26.4	45.2	39.6	5.6	B.	217.	23.1	15.7	7.4	21.6	1.52	1.056	.464	2.74	2.1	.64	....	.12	....	21.	28.	+	365,000
7781	June 26	" 27	*	Much	T. F.3	"	722.8	659.2	63.6	56.4	37.6	18.8	B.	227.	26.9	12.7	14.2	22.4	1.408	1.152	.256	3.88	1.54	2.34	.002	.2	....	22.	31.	—	750,000
7822	July 3	July 4	*	Little	T. F.01	"	363.6	319.2	44.4	29.6	17.6	12.	B.	75.	13.2	7.8	5.4	6.4	.88	.24	.64	1.46	.74	.72	.002	.12	....	18.	......	—	1,195,000
7893	" 9	" 11	*	"	T. F.20	M'sty	500.	442.8	57.2	36.	20.	16.	B.	120.5	16.8	8.3	8.5	8.8	.576	.496	.08	.97	.644	.326	.004	.04	....	—	......	+	160,000
7938	" 16	" 17	†	"	T. F.03	Gas'y	437.6	406.4	31.2	37.6	28.4	9.2	B.	117.	16.2	7.2	9.	8.8	.88	.352	.528	1.28	.612	.668	....	.12	....	....	......	?	780,000
8008	" 23	" 24	†	"	T. F.02	"	418.8	392.	26.8	24.4	24.	.4	B.	117.5	10.7	7.8	2.9	12.	.96	.288	.672	1.8	.616	1.184	.001	.2	....	....	......	+	780,000
8057	" 30	" 31	*	"	T. F.02	"	582.4	570.4	12.	46.	46.	0.0	B.	182.	16.7	14.8	1.9	13.6	1.248	.448	.8	2.52	1.08	1.44	....	.24	....	...	......	+	420,000
8113	Aug. 6	Aug. 8	*	"	T. F.02	"	609.2	572.8	36.4	45.6	45.2	.4	B.	193.	21.	8.4	12.6	19.2	1.36	.48	.88	3.32	1.112	2.208	.001	.12	....	. ..	......	?	430,000
8173	" 13	" 15	*	"	T. F.02	"	408.	383.6	24.4	44.4	30.4	14.	B.	116.	17.1	6.5	10.6	12.	1.184	.208	.976	1.88	.44	1.44	....	.4	....	....	......	+	180,000
8233	" 20	" 21	*	"	T. F.02	"	595.2	523.6	71.6	45.2	23.6	21.6	DB	188.	27.1	10.6	16.5	19.2	1.68	.336	1.314	3.32	.572	2.748	....	.2	...	24.	......	+	370,000
8307	" 27	" 28	*	"	T. F.02	"	551.2	529.6	21.6	35.6	20.	15.6	B.	166.5	18.7	6.8	11.9	9.2	1.088	.368	.72	2.04	.54	1.5	....	.08	....	25.5	......	?	930,000
8368	Sept. 4	Sept. 5	*	"	M. F.02	"	595.6	558.4	37.2	38.8	22.8	16.	B.	184.	16.7	7.	9.7	21 6	1.28	.436	.844	2.46	.412	2.048	....	.28	....	24.	......	—	610,000
8436	....	" 11	*	Cons'd	M. F.1	"	565.6	516.8	48.8	58.	31.6	26.4	B.	170.	25.3	7.4	17.9	19.2	1.44	.432	1.008	2.86	.72	2.14	.001	.16	....	23.	......	—	5,780,000
8491	Sept. 17	" 19	*	"	M. F.2	"	724.8	281.6	443.2	49.2	45.6	3.6	B.	256.5	23.8	11.7	12.1	21.8	1.6	.496	1.104	2.14	.56	1.58	.001	.2	....	19.	......	—	170,000
8546	" 24	" 27	§	Much	Black	"	833.6	605.6	228.	76.	27.2	48.8	B.	212.5	41.2	18.1	23.1	20.	2.96	.352	2.608	6.04	.928	5.112	....	.28	....	19.	......	?	6,600,000
8594	Oct. 1	Oct. 2	†	Little	M. F.4	M'sty	613.2	525.2	88.	47.2	18.4	28.8	B.	189.	28.3	13.5	14.8	.372	1.76	.72	1.04	2.704	1.104	1.6	....	.08	....	—	......	--	1,210,000

TURBIDITY—*Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 42.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS. PARTS PER MILLION.

SOURCE OF WATER—DES PLAINES RIVER, LOCKPORT.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dissolv'd	Loss on Ig'n. Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
6607	Jan. 2	Jan. 3	+	Little	F.1	......	725.6	696.8	28.8	62.8	40.8	22.	B.	15.5	13.5	12.3	1.2	.06	.512	.4	.112	1.48	.872	.608	.007	1.52	1.	0.	......	....	1.500
6644	" 8	" 9	|	"	F.03	......	359.2	348.	11.2	54.4	54.4	....	G.	7.7	5.4	5.	.4	.048	.24	.224	.016	.68	.488	.192	.003	.84	....	....	......	−	30,000
6689	" 15	" 16		"	F.04	......	444 8	442.	2.8	48.8	46.4	2.4	B.	10.	7.2	7.2	....	.024	.256	.24	.016	.64	.544	.096	001	1.04	1.	0.	......	−	6.150
6737	" 23	" 24	+	"	M. F.05	.....	402	379.2	22.8	26.4	23.6	2.8	B.	8.4	8.	7.9	.1	.728	.352	.288	.064	.8	.64	.16	.015	.8	....	3.3	......	+	156.000
6781	" 29	" 30	*	Cons'd.	M. F.5	......	257 2	242.	15.2	41.2	36.8	4.4	B.	4.3	12.9	12.2	.7	.24	.416	.384	.032	.96	.864	.096	.007	1.6	....	0.	8.	+	18.200
6840	Feb. 5	Feb. 6	+	Little	M. F 5	....	291.2	285.6	5.6	36.8	35.2	1.6	B.	5.5	4.8	4.7	.1	.14	.32	.304	.016	.864	.8	.064	.01	1.12	....	0.	- 9.5	+	2.000
7021	Mar. 5	Mar. 6	+	"	M. F.3	......	376 8	366.4	10.4	14.4	13.6	.8	B.	7.	8.6	8.6	....	.456	.352	.256	.096	.864	.64	.224	.013	1.32	....	0.	−12	−	5.000
7068	" 11	" 13	*	Cons'd	M. F.4	......	168.	124.8	43.2	23.6	18.8	4.8	B.	2.4	12.2	7.6	4.6	.256	.352	.288	.064	.992	.64	.352	.012	.56	....	0.	3.5	+	450.000
7118	" 19	" 20	*	"	M. F.6	......	170.4	142.4	28.	17.2	13.2	4.	B.	1.2	13.8	10.2	3.6	.26	.448	.272	.176	1.	.6	.4	.014	.72	....	10.	.....	+	120.000
7164	" 26	" 27	*	"	M. F.5	......	228.8	138.4	90.4	23.6	17.2	6.4	B.	2.8	13.4	9.4	4.	.18	.416	.304	.112	1.176	.888	.288	.011	.48	....	0.	......	+	95.000
7216	April 2	April 3	*	"	M. F.2	......	197.6	172.	25.6	20.4	14.4	6.	B.	3.5	12.4	9.2	3.2	.148	.336	.304	.032	.728	.696	.032	.022	.68	....	0.	3.5	+	62,000
7271	" 9	" 10	*	"	M. F.30	......	277.2	238.4	38.8	34.4	22.8	11.6	B.	4.4	13.4	9.4	4.	.08	.368	.32	.048	.856	.696	.16	.016	.64	....	10.	1.5	+	45.000
7329	" 16	" 17	*	"	M. F.15	......	333 6	296.4	37.2	32.4	26.	6.4	B.	7.	9.5	9.5	0.0	.048	.4	.32	.08	.984	.568	.416	.015	48	....	8.8	22.	+	6.000
7397	" 23	" 24	+	Little	M. F.04	.....	368.4	354.4	14.	23.6	19.2	4.4	B.	.....	11.3	10.1	1.2	.48	.512	.32	.192	.984	.76	.224	.014	.56	....	8.8	21.	+	2.500
7437	" 30	May 1	+	Cons'd	M. F.30	......	411.6	396.4	15.2	37.6	31.2	6.4	B.	5.9	13.8	6.5	7.3	.012	512	.444	.068	.92	.772	.148	.008	.46	....	14.4	25	+	4.000
7479	May 8	" 9	*	"	M. F.10	......	459.6	387.2	72.4	43.6	34.8	8.8	B.	6.2	11.9	9.2	2.7	.068	.576	.432	.144	1.06	.8	.26	.008	.32	....	....	......	....	....
7534	" 15	" 16	|	Little	M. F.30	......	380.8	349.6	31 2	30.	28.4	1.6	B.	7.	13.5	10.4	3.4	.082	.48	.32	.16	1.16	.518	.612	.04	8	....	15.5	28.	+	10.600
7586	" 22	" 23	*	Cons'd	M. F.4	......	391 2	244.	147.2	13.2	43.2	0.0	B.	9.2	11.5	9.4	2.1	.114	.512	.418	.064	.74	.676	.064	.001	.16	...	22.2	26.5	−	4,550
7622	" 29	" 30	*	"	M. F.10	......	413.2	387.2	26.	48.4	45.6	2.8	B.	9.4	12.4	9.4	3.	08	.416	.32	.096	.8	.68	.12	01	48	....	16.6	20.5	+	3.400
7655	June 4	June 5	+	"	M. F.10	......	374.	344.4	29.6	43.2	36.	7.2	B.	9.9	9.8	8.8	1.	.308	.432	.4	.032	.964	.708	.256	.003	.2	20.5	....	25.5	+	138,700
7704	" 12	" 13	+	Little	M. F.03	......	357.6	340.4	17.2	32.8	27.6	5.2	B.	9.5	9.5	8.1	1.1	.018	.432	.288	.144	.8	.52	.28	.008	.44	24.	....	22.		17.550
7740	" 18	" 19	+	"	M F.2	......	367.6	356.4	11.2	50.	42.4	7.6	B.	10.2	11.6	9.2	2.4	.05	.736	.32	.416	.692	.42	.272	.003	.16	20.5	....	25 5	−	1,500
7780	" 26	" 27	‡	"	M. F.15	M'sty	304.8	298.	6.8	44.4	17.6	26.8	B.	9.	9.7	9.1	.3	.052	.368	.304	.064	.644	.516	.128	.001	.08	20.5	....	31.	−	2.900
7821	July 3	July 4	*	"	T. F.10	......	388.8	379.6	9.2	62.4	60.8	1 6	B.	9 7	11.2	11.	.2	.13	.48	.368	.112	.996	.644	.352	.005	08	17.2	....	......	...	5.100
7894	" 9	" 11	*	"	T. F.30	......	361 6	351.6	10.	58.4	56.	2.4	B.	9.	9.8	9.3	.5	.06	.368	.304	.064	.804	.71	.064	....	.46	....	....	......	....	2.100

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 43.

STREAMS EXAMINATION--CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—DRAINAGE CHANNEL, BEAR TRAP DAM, LOCKPORT.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Dis-solved.	Sus-pended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	By Dis-solved.	By Suspd Matter.	Free Ammonia.	Nitrogen as Ammonia, Albuminoid Am.: Tot'l	Dis-solv'd	Sus-pnd'd	Organic Nitrogen: Total.	Dis-solved.	Sus-pended.	Nitrogen as: Nitrites.	Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
7895	July 9	July 10	*	Little	T. F.20	Gas'y	272.4	255.2	17.2	44.4	32.8	11.6	B.	21.	9.5	7.5	2.	2.08	.68	.176	.504	1.092	.42	.672	.004	.04	....	....	......	....	....
7923	" 11	" 14	‡	V. "	C. F.01	"	192.8	178.	14.8	15.6	14.4	1.2	B.	12.	5.	4.3	.7	1.36	.256	.176	.08	.76	.42	.34	.034	.12	....	....	......	....	....
7939	" 16	" 17	†	"	T. F.02	"	210.4	190.	20.4	22.4	11.6	10.8	B.	16.	7.4	4.3	3.1	1.52	.368	.272	.096	.6	.452	.148	.001	.2	....	....	......	....	....
7981	" 18	" 19	‖	V. "	F.02	"	176.8	162.	14.8	17.2	14.	3.2	B.	12.	5.2	4.2	1.	1.00	.324	.16	.164	.....	.....	.....	.005	.16	....	....	......	....	335,000
7993	" 20	" 21	*	"	T. F 02	"	176.8	160.4	16.4	17.6	11.6	6.	B.	14.	5.4	4.	1.4	1.04	.208	.176	.032	.68	.54	.14	....	.04	....	....	......	....	680,000
8007	" 23	" 24	†	"	T. F.01	"	190.	161.4	25.6	26.8	18.8	8.	G.	12.	5.7	5.3	.4	1.32	.272	.144	.128	.68	.42	.26	.001	.12	....	....	......	....	695,000
8023	" 25	" 26	†	"	T. F 04	"	164.4	156.	8.4	19.6	19.6	0.	B.	10.	5.5	4.8	.7	1.36	.272	.112	.16	.68	.392	.288	.007	.2	....	....	......	....	....
8045	" 27	" 28	*	Much	T. F.01	"	257.2	208.	49.2	40.4	30.4	10.	B.	19.	7.5	6.1	1.4	2.44	.368	.208	.16	.8	.6	.2	.001	.16	....	....	......	....	....
8058	" 30	" 31	*	Little	T. F.01	"	197.2	176.8	20.4	19.6	18.8	.8	B.	15.	5.6	5.4	.2	1.2	.48	.176	.304	1.16	.52	.64	....	.08	....	....	......	....	520,000
8082	Aug. 1	Aug. 2	*	"	T. F.01	"	197.2	157.6	39.6	35.2	19.2	16.	G.	13.	5.8	5.5	.3	1.6	.288	.192	.096	.76	.44	.32	....	.28	....	....	......	....	1,890,000
8114	" 6	" 8	*	"	T. F.01	"	198.	180.8	17.2	36.8	30.	6.8	W.	16.	7.5	4.9	2.6	1.88	.352	.256	.096	.84	.712	.128	.001	.52	....	....	......	....	550,000
8136	" 8	" 9	*	"	T. F.01	"	192.8	174.	18.8	37.6	28.4	9.2	B.	14.	6.1	5.3	.8	1.44	.448	.192	.256	1.12	.68	.44	.001	.16	....	....	......	....	2,620,000
8155		" 13	*	"	T. F.01	"	171.2	166.8	4.4	32.4	29.2	3.2	G.	16.	6.	4.2	1.8	1.92	.301	.176	.128	.76	.284	.476	....	.2	....	....	......	....	210,000
8174	" 13	" 15	*	"	T. F.01	"	154.4	154.	.4	29.2	22.4	6.8	G.	14.	4.6	3.8	.8	1.36	.272	.176	.096	1.	.504	.496	.001	.28	....	....	......	....	80,000
8192	" 15	" 16	*	"	T. F.01	Foul	178.4	165.2	13.2	30.8	26.4	4.4	B.	13.	11.	4.4	6 6	2.88	.992	.144	.848	2.52	.36	2.16	....	.2	....	....	......	....	340,000
8216	" 17	" 18	*	"	T. F.01	Gas'y	218.	188.8	29.2	41.2	31.6	9.6	B.	20.	8.	5.	3.	2.16	.368	.16	.208	.76	.348	.412	.001	.36	....	....	......	....	....
8232	" 20	" 21	*	"	T. F.02	"	218.8	209.2	9.6	32.8	22.	10.8	B.	25.	14.9	5.1	9.8	2.	.688	.176	.512	1.4	.284	1.116	....	.2	....	22.	......	....	250,000
8264	" 22	" 23	*	"	T. F.02	"	200.8	174.8	26.	12.8	10.4	2.4	G.	16.	7.1	3.4	3.7	1.84	.384	.112	.272	.91	.22	.72	....	.16	....	23.	......	....	415,000
8281	" 24	" 25	*	"	T. F.02	"	230.	205.2	24.8	30.8	17.6	13.2	G.	22.	7.7	4.	3.7	2.4	.368	.112	.256	1.	.3	.7	.004	.16	....	23.	......	....	965,000
8308	" 27	" 28	*	"	M. F.02	"	221.6	217.6	4.	20.4	18.8	1.6	B.	23.	11.2	4.5	6.7	2.08	.432	08	.352	1.16	.268	.892	.001	.16	....	24.	......	....	4,900,000
8335	" 30	" 31	*	"	T. F.02	"	202.4	180.4	22.	19.2	16.4	2.8	G.	15.	5.7	4.	1.7	2.08	.32	.16	.16	.76	.3	.46	.002	.24	....	22.	......	....	70,000
8349	" 31	Sept. 3	§	"	M. F.02	"	212.4	169.2	53.2	14.8	12.	2.8	B.	15.	7.	3.9	3.1	1.336	.4	.208	.192	.6	.38	.22	.01	.16	....	23.	......	....	260,000
8367	Sept. 4	" 5	‖	"	F.4	"	173.2	166.8	6.4	12.	10.4	1.6	G.	12.	6.	3.	3.	.112	.208	.128	.08	.62	.22	.4	.007	.16	....	23.	......	....	545,000
8388	" 5	" 6	‖	"	F.01	"	179.2	173.6	5.6	17.6	13.2	4.4	B.	14.	6.9	3.	3.9	1.28	.384	.16	.224	.62	.328	.292	.002	.24	....	24.	......	....	120,000
8416	" 7	" 8	†	Cons'd	F.1	M'sty	206.4	192.8	13.6	38.4	13.2	25.2	B.	17.	17.4	5.6	11.8	1.2	.64	.208	.432	1.4	.....	.....	.004	.2	....	....	......	....	....
8435		" 11	†	Little	F.04	"	198.	180.4	17.6	19.2	17.2	2.	DG.	19.	9.5	4.1	5.4	2.08	.544	.176	.368	1.212	.384	.828	.003	.16	....	20.5	......	....	2,515,000
8455	" 12	" 13	†	Cons'd	.1	"	200.	197.2	2.8	18.	16.8	1.2	B.	19.	10.2	4.6	5.6	2.52	.652	.124	.528	3.1	.....	.....	.001	.16	....	24.	......	....	400,000
8472	" 14	" 15	†	Little	.2	"	216.4	215.2	1.2	22.4	22.	.4	B.	24.	10.6	8.4	2.2	2.8	.688	.208	.48	.62	.336	.284	....	.28	....	25.	......	....	395,000
8490	" 17	" 19	†	"	.02	"	176.8	146.	30.8	14.8	13.2	1.6	G.	13.	6.1	4.4	1.7	1.36	.32	.096	.224	.652	.32	.332	.012	.4	....	10.	......	....	355,000
8508		" 20	..	....	....	......	......	.....	.....	....	.....	....	......	.....	....	....	....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	......	....	....
8522	" 21	" 22	‖	VLittle	F.02	M'sty	199.2	194.4	4.8	19.6	18.4	1.2	DB.	17.	7.6	5.9	1.7	.192	.352	.124	.228	.6	.4	.2	.001	.8	....	15.	......	....	120,000
8547	" 24	" 27	‖	"	.02	"	168.4	166.8	1.6	24.	18.	6.	G.	10.	3.2	3.	.2	1.52	.144	.096	.048	.636	.384	.252	.007	.24	....	17.	......	....	70,000
8565	" 26	" 28	†	"	F.03	"	200.8	177.2	23.6	24.8	20.	4.8	B.	15.	6.3	3.9	2.4	1.76	.224	.096	.128	.572	.336	.236	.001	.28	....	22.	......	....	2,480,000
8574	" 28	Oct. 1	†	"	.05	"	184.8	170.	14.8	16.4	13.6	2.8	Bh.	12.	6.	3.8	2.2	.62	.48	.128	.352	.54	.352	.188	.002	.28	....	16.	......	....	360,000
8593		" 2	‖	"	F.05	......	186.8	173.6	13.2	16.4	15.2	1.2	B.	14.	6.5	5.6	.9	1.12	.544	.224	.32	.928	.496	.432	.001	.04	....	....	......	....	2,070,000
8615	Oct. 3	" 4	‖	"	F.03	M'sty	168.8	164.8	4.	31.2	26.	6.2	G.	11.	5.3	4.5	.8	1.12	.304	.272	.032	.592	.496	.096	.001	.16	....	....	......	....	620,000
8627	" 5	" 6	‖	"	F.01	......	178.8	163.6	15.2	22.4	18.4	4.	Bh.	11.	5.5	4.	1.5	1 31	.24	.....	.....	.592	.272	.32	.001	.24	....	....	......	....	120,000

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 44.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—DESPLAINES RIVER, NORTH OF JACKSON ST., JOLIET.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6602	Jan. 2	Jan. 3	*	Cons'd	M. F.4	Gas'y	530.4	488.	42.4	81.6	58.4	23.2	B.	112.	34.6	21.9	12.7	15.2	3.84	2.88	.96	7.4	3.92	3.48	.005	.2	....	?	9.5	+	1,680,000
6639	" 8	" 9	*	"	M. F.5	"	476.8	453.2	23.6	44.1	36.	8.4	B.	113.5	27.8	20.8	7.	10.8	2.48	2.	.48	6.12	4.52	1.6	.002	.2	....	10.	12.	+	970,000
6690	" 15	" 16	*	"	M. F.5	"	478.	430.8	47.2	48.	47.6	.4	B.	93.	18.1	15.6	2.5	10.8	2.32	1.68	.64	5.12	3.36	1.76	.02	.08	....	0.	0.	+	1,245,000
6731	" 22	" 23	*	"	M. F.4	"	378.4	308.	70.4	50.1	31.2	19.2	B.	35.	21.6	11.5	10.1	4.4	1.28	.64	.64	3.2	1.024	2.176	.013	.16	....	4.5	6.	+	805,000
6777	" 29	" 30	*	Much	M. F.04	"	297.6	194.4	103.2	23.2	14.8	8.4	B.	14.	11.8	5.6	6.2	.96	.8	.256	.544	2.08	.56	1.52	.002	.28	....	0.	-16.5	+	165,000
6833	Feb. 5	Feb. 6	+	Little	M. F.03	"	220.4	208.8	11.6	20.4	17.2	3.2	B.	22.	17.3	6.3	11.4	1.76	.48	.204	.276	.96	.64	.32	.01	.32	....	....	11.	...	.....
6888	" 12	" 13	*	Much	M. F.15	"	336.	206.	130.	33.6	18.	15.6	B.	21.	17.4	8.3	9.1	2.08	1.04	.352	.688	2.4	.864	1.536	.06	.56	....	10.	3.5	+	1,520,000
6932	" 19	" 20	*	Cons'd	M. F.04	"	232.4	181.4	48.	22.4	21.6	.8	B.	15.	9.	6.8	2.2	.96	.704	.352	.352	1.52	.64	.88	.025	.18	....	13.	13.5	.	1,550,000
6981	" 26	" 27	*	"	M. F.03	"	223.6	196.8	26.8	37.6	17.6	20.	G.	47.	7.2	4.9	2.3	1.28	.672	.384	.288	1.68	1.216	.464	.018	.56	....	8.	-14.5	....	1,275,000
7015	Mar. 5	Mar. 6	+	"	M. F.3	"	270.	218.1	21.6	19.2	13.2	6.0	B.	33.	12.4	8.6	3.8	2.4	1.12	.608	.512	2.24	.96	1.28	.07	.36	....	18.	- 2.	+	1,720,000
7063	" 12	" 13	*	"	M. F.04	"	249.2	202.8	46.4	22.8	15.2	7.6	B.	23.	11.6	7.4	4.2	1.92	.832	.272	.56	1.92	.864	1.056	.055	.56	....	13.	- 4.	+	835,000
7111	" 19	" 20	*	"	M. F.5	......	259.6	239.2	20.4	29.2	15.2	14.	G.	24.	16.6	10.8	5.8	2.16	1.181	.48	.701	2.92	.92	2.	.02	.48	....	3.5	4.5	...	1,525,000
7161	" 26	" 27	*	"	M. F.50	Gas'y	262.	152.8	109.2	31.4	16.8	14.6	B.	11.5	14.9	11.6	3.3	1.01	.608	.288	.32	1.56	.984	.576	.027	.48	....	4.	- 3.5	..	920,000
7215	Apr. 2	Apr. 3	+	Little	M. F.03	......	210.	174.8	35.2	17.6	16.	1.6	B.	12.	12.8	7.2	5.6	1.12	.56	.272	.288	1.368	.76	.608	.018	.6	..	2.	2.	+	1,310,000
7267	" 9	" 10	*	Cons'd	M. F.03	......	235.6	197.2	38.4	19.2	16.	3.2	B.	12.	8.3	6.8	1.5	.96	.48	.24	.24	1.016	.536	.48	.03	.52	....	6	4.5	−	2,660,000
7320	" 16	" 17	*	"	M. F.06	......	271.2	215.2	26.	14.8	13.2	1.6	B.	31.3	9.3	7.1	2.2	2.96	.736	.304	.432	1.8	.984	.816	.038	.36	....	—	11.	+	2,150,000
7380	" 23	" 21	†	"	M. F.03	......	302.1	276.	26.4	27.6	26.1	1.2	B.	31.7	9.	6.3	2.7	3.36	.566	.32	.246	1.	.728	.272	.018	.36	....	1.1	11.	+	170,000
7434	" 30	May 1	+	Little	M. F.02	......	230.8	218.8	12.	39.2	18.4	20.8	G.	30.	6.7	5.	1.7	2.96	.336	.216	.12	.74	.52	.22	.013	.2	....	8	12.	+	80,000
7474	May 7	" 8	*	Cons'd	M. F.02	Foul	250.8	238.8	12.	28.	25.6	2.4	G.	40.	12.2	7.9	4.3	4.16	.608	.288	.32	1.114	.532	.912	.006	.16	....	11.	16	+	2,125,000
7521	" 14	" 15	+	Little	.01	......	266.4	258.	8.4	29.6	26.8	2.8	G.	30	9.3	6.5	2.8	3.	.352	.224	.128	.74	.388	.352	.03	.36	....	18.	20.	+	90,000
7576	" 21	" 22	+	"	M. F.01	......	243.6	220.4	23.2	30.4	23.6	6.8	B.	30.	8.	6.8	1.2	3.84	.416	.384	.032	.644	.452	.192	.023	.32	....	22.	21	+	70,000
7612	" 28	" 29	+	Cons'd	M. F.03	Gas'y	287.6	260.	27.6	22.1	21.6	.8	G.	17.5	9.8	8.	1.8	5.6	.608	.432	.176	1.91	1.22	.72	.035	.36	....	20	21.	+	60,000
7652	June 4	June 5	+	"	M. F.01	M'sty	276.8	250.	26.8	10.	36.	4.	B.	39.	8.5	6.6	1.9	4.32	.48	.256	.224	.9	.612	.288	.035	.21	....	22.	20.	+	60,000
7695	" 11	" 12	†	Little	M. F.02	......	221.	210.	14.	32.1	29.2	3.2	B.	19.5	7.4	7.1	.3	2.24	.368	.224	.144	.708	.152	.256	.035	.28	....	22.	16.	+	100,000
7731	" 18	" 19	+	"	M. F.2	M'sty	211.	201.2	12.8	22.	20.	2.	B.	16.	8.6	8.6	0.0	1.52	.384	.256	.128	.98	.5	.48	.03	.08	....	26.	21.	+	175,000
7772	" 25	" 26	+	Slight	T. F.02	"	214.	195.2	18.8	25.2	24.8	.4	B.	17.	5.7	4.6	1.1	1.52	.256	.128	.128	.324	.132	.192	.023	.12	....	24.	32.	?	85,000
7816	July 2	July 3	*	Little	T. F.03	"	217.6	204.	13.6	32.	21.4	7.6	B.	23.	7.1	5.8	1.3	1.92	.324	.208	.416	.812	.308	.504	.018	.12	....	30.	......	...	150,000
7925	" 11	" 16	+	"	T. F.01	"	236.4	208.	28.4	21.	10.4	13.6	B.	24.	7.	5.4	1.6	2.32	.288	.128	.16	.76	.58	.18	.15	.28	....	....	......	...	......
7940	" 16	" 17	+	"	T. F.02	.....	239.2	200.	39.2	25.2	21.8	.4	B.	19.7	8.	5.5	2.5	2.08	.368	.096	.272	.76	.136	.321	.036	.16	....	—	......	?	210,000
8006	" 23	" 24	+	"	T. F.01	Gas'y	189.2	177.6	11.6	29.2	12.	17.2	G.	52.5	5.9	5.5	.4	2.	.24	.208	.032	.61	.48	.46	.026	.2	....	?	.....	+	120,000
8056	" 30	" 31	+	"	T. F.01	"	214.8	179.6	35.2	36.1	27.6	8.8	G.	15.	5.1	1.5	.6	1.12	.192	.114	.018	.52	.44	.08	.03	.2	....	....	......	+	115,000
8105	Aug. 6	Aug. 7	+	"	T. F.01	"	219.2	197.6	21.6	31.8	34.8	0.0	G.	16	6.8	6.4	.7	1.52	.24	.144	.096	.76	.296	.464	.026	.11	....	15.5	......	?	25,000
8161	" 13	" 14	‡	"	T. F.01	"	200.4	173.6	26.8	28	24.8	3.2	G.	19.	7.9	3.4	1.5	1.92	.272	.176	.096	.68	.268	.112	.032	.36	....	15.5	......	?	320,000
8219	" 20	" 21	*	"	T. F.01	"	219	204.8	41.8	40.4	26.	14.4	B.	25	11.1	5.7	5.4	2.64	.512	.192	.32	.92	.092	.828	.048	.36		....	......	....	....
8306	" 27	" 28	*	"	T. F.	"	262.4	245.2	17.2	25.2	13.6	11.6	B.	29.	8.8	4.	4.8	3.28	.416	.144	.272	.84	.444	.396	.008	.08		10.	......	?	49,000
8357	Sept. 3	Sept. 4	*	"	M. F.03	M'sty	215.2	208.8	6.4	17.2	14.8	2.4	B.	13.	8.6	4.4	1.2	1.311	.352	.192	.16	.54	.268	.272	.01	.2	....	15.5	......	....	8,000
8426	" 10	" 11		"	F.02	Gas'y	210.	230.8	9.2	25.2	16.	9.2	B.	26.	9.4	4.6	1.8	2.8	.48	.192	.288	.86	.512	.318	.046	.44	....	....	......	....	......
8479	" 17	" 18	*	Cons'd	M. 1.01	"	261.6	252.4	9.2	32.8	18.8	11.	B.	37.	8.9	4.4	1.5	2.	.164	.096	.368	.856	1	.156	.02	.32	....	1.0	......	?	182,000
8531	" 24	" 25	+	Little	M. F.03	M'sty	266	218.	48.	22.8	20.8	2.	B.	25.	7.6	4.1	3.5	1.64	.448	.16	.288	.892	.164	.128	.016	.4	...	30.	......	....	120,000
8590	Oct. 1	Oct. 2		"	F.04	......	220.8	186.4	34.4	20.	16.	4.	B.	15.	8.9	5.2	3.7	2.	.496	.272	.224	1.168	.416	.752	.03	.24	....	30.	......	....	610,000

TURBIDITY * Decided. § Very Decided. + Distinct. ‡ Very Slight. Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 45.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—KANKAKEE RIVER, WILMINGTON.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6601	Jan. 1	Jan. 2	†	Little	F.08	......	371.6	361.6	10.	39.6	36.4	3.2	B.	4.	14.5	14.5	0.0	.06	.384	.368	.016	1.164	.936	.228	.015	4.8	2.6	0.	8.	+	5,500
6640	" 8	" 9	†	"	F.1	......	370.4	364.8	5.6	51.6	46.8	4.8	B.	4.7	11.6	11.	.6	.048	.432	.4	.032	1.16	.936	.224	.017	4.1	2.	0.	0.	+	2,900
6686	" 15	" 16		"	F.02	......	314.	313.2	.8	40.4	40.	.4	B.	3.9	8.1	7.9	.2	.04	.221	.208	.016	.704	.64	.064	.013	3.	1.8	0.	5.	+	7,000
6733	" 22	" 23	†	"	F.15	......	262.4	262.4	0.0	19.6	19.6	0.0	B.	3.	7.6	7.6	0.0	.048	.24	.224	.016	.608	.544	.064	.01	2.4	1.8	1.	3.	+	10,000
6782	" 29	" 30	†	"	F.06	......	288.	282.4	5.6	39.6	37.2	2.4	G.	3.2	8.4	8.4	0.0	.028	.352	.256	.096	.64	.48	.16	.005	2.6	1.3	0.	−8.	-	3,950
6832	Feb. 5	Feb. 6	†	"	F.10	......	327.6	327.2	.4	40.8	20.4	20.4	B.	3.7	12.3	10.8	1.5	.024	.32	.288	.032	.864	.768	.096	.005	2.2	....	....	0.	....	....
6887	" 12	" 13	*	Much	M. F.15	......	877.6	173.2	704.4	64.8	22.4	42.4	B.	2.6	23.9	8.3	15.6	.16	1.184	.352	.832	2.56	.8	1.76	.02	4.	1.8	−0.	9.	—	102,000
6928	" 19	" 20	†	Little	M. F.15	......	306.	290.	16.	40.	40.	0.0	B.	3.6	9.	8.5	.5	.10	.416	.336	.08	.768	.608	.16	.017	4.2	1.	1.	3.		9,500
7052	Mar. 9	Mar. 10	*	Cons'd	M. F.04	......	216.4	167.2	79.2	22.8	22.	.8	B.	2.6	13.2	6.4	6.8	.16	.32	.192	.128	1.04	.544	.496	.017	1.76	.1	0.	6.	....	63,000
7092	" 15	" 16	*	"	M. F.40	......	612.4	112.	500.4	30.4	16.	14.4	B.	1.35	21.2	8.3	12.9	.112	.96	.256	.704	.24	.48	1.92	.01	1.08	.1	0.	−6.	+	183,000
7119	" 19	" 20	*	"	M. F.20	......	243.2	161.2	82.	26.	13.6	12.4	B.	2.8	12.3	8.6	3.7	.112	.384	.24	.144	.92	.568	.352	.009	1.8	1.8	3.	3.	+	23,000
7166	" 26	" 27	*	"	M. F.25	......	199.6	166.8	32.8	22.8	16.	6.8	B.	2.4	11.	8.8	2.2	.08	.64	.256	.384	1.08	.824	.256	.007	1.76	1.8	3.	3.	+	32,000
7210	Apl. 2	Apl. 3	*	"	M. F.20	......	369.6	150.4	219.2	31.6	16.	15.6	B.	2.7	17.3	9.6	7.7	.072	.512	.24	.272	1.24	.632	.608	.011	2.88	1.8	5.	6.	+	147,000
7265	" 9	" 10	*	Little	M. F.03	......	348.8	301.2	47.6	28.8	28.8	0.0	B.	1.1	6.1	5.1	1.	.02	.224	.144	.08	.536	.408	.128	.014	5.6	1.8	9.	1.	+	42,000
7322	" 16	" 17	†	"	M. F.04	......	318.	304.8	13.2	42.8	40.4	2.4	B.	3.9	4.3	4.3	0.0	.008	.176	.128	.048	.408	.344	.064	.014	3.2	2.	....	......	+	13,000
7392	" 23	" 24	†	"	M. F.03	......	307.6	298.4	9.2	47.2	38.	9.2	B.	4.2	7.4	4.4	3.	.006	.112	.104	.008	.6	.472	.128	.016	4.6	1.8	....	......	+	6,000
7433	" 30	May 1	†	"	F.02	......	336.4	327.6	8.8	67.6	64.4	3.2	G.	4.3	4.3	4.3	0.0	.016	.16	.128	.032	.548	.48	.068	.03	2.96	1.8	12.	10.	+	2,300
7472	May 7	" 8	†	Cons'd	M. F.30	......	318.8	296.4	22.4	28.	26.	2.	G.	3.7	18.2	13.5	4.7	.044	.512	.464	.048	1.06	.9	.16	.01	1.12	2.	15.5	15.	+	3,550
7522	" 11	" 15	*	"	M. F.3	......	312.	280.4	31.6	42.8	35.2	7.6	G.	4.	15.3	10.9	4.4	.064	.544	.32	.224	1.06	1.028	.032	.015	1.24	1.8	20.5	22.	+	2,650
7579	" 21	" 22	*	Little	M. F.3	......	330.4	292.4	38.	48.8	44.8	4.	B.	3.4	17.1	12.7	4.4	.056	.512	.432	.08	.964	.58	.384	.013	1.32	1.6	15.	11.5	—	2,800
7613	" 28	" 29	†	"	M. F.20	......	320.	276.4	43.6	40.4	40.4	0.0	B.	3.5	13.8	9.6	4.2	.044	.368	.256	.112	.96	.8	.16	.03	3.	1.8	21.	18.	+	5,200
7650	June 4	June 5	+	Cons'd	M. F.03	......	360.4	324.8	35.6	58.	51.6	6.4	B.	4.5	7.5	5.5	2.	.024	.24	.208	.032	.52	.452	.068	.035	2.6	1.8	17.	15.5	+	1,200
7696	" 11	" 12	*	"	M. F.03	......	363.6	302.	61.6	45.6	44.8	.8	B.	3.5	9.5	6.9	2.6	.072	.272	.144	.128	.612	.452	.16	.03	4.6	1.8	19.	18.	?	7,000
7735	" 18	" 19	*	Little	M. F.05	......	316.	194.8	121.2	32.4	14.8	17.6	B.	3.5	9.4	6.1	3.3	.048	.304	.192	.112	.74	.356	.384	.008	1.	1.6	19.	14.5	+	1,850
7773	" 25	" 26	‖	"	M. F.03	......	329.6	294.8	34.8	34.4	30.4	4.	B.	3.4	8.7	7.5	1.2	.042	.24	.224	.016	1.06	.612	.448	.008	.92	1.8	22.	20.	+	1,550
7815	July 2	July 3	*	Much	T. F.20	M'sty	261.6	235.6	26.	41.6	38.4	3.2	B.	3.	9.	8.7	.3	.074	.24	.176	.064	.676	.58	.096	.013	.96	....	....	......	....	......
8108	Aug. 6	Aug. 7	*	Little	T. F.01	......	274.4	225.6	48.8	54.4	36.8	17.6	B.	2.2	10.8	8.5	2.3	.144	.304	.256	.048	.644	.324	.32	.008	.76	1.8	....	......	—	1,850
8162	" 13	" 14	*	"	T. F.01	......	271.2	231.2	40.	38.	38.8	0.0	B.	3.4	10.7	7.7	3.	.12	.336	.304	.032	.644	.412	.232	.013	.6	1.3	....	......	?	2,650
8226	" 20	" 21	*	"	T. F.02	......	296.8	229.2	67.6	30.	28.4	1.6	B.	4.5	9.	5.7	3.3	.16	.288	.208	.08	.632	.38	.252	.022	.92	2.	....	......	+	1,100
8336	" 30	" 31	*	"	M. F.15	......	288.	194.	94.	34.	32.	2.	B.	2.6	10.3	5.4	4.9	.124	.272	.256	.016	.568	.452	.116	.013	1.01	2.	21.	......	−	2,300
8391	Sept. 6	Sept. 7	*	Cons'd	M. F.2	......	313.6	266.	47.6	30.8	21.6	9.2	DB.	2.2	10.3	8.	2.3	.110	.208	.192	.016	.536	.496	.04	.01	.72	1.3	21.	......	+	4,500
8461	" 13	" 14	*	"	M. F.3	......	329.2	295.2	34.	32.8	31.6	1.2	DB.	3.	12.7	9.9	2.8	.081	.32	.288	.032	.552	.....	.....	.006	.56	1.6	...	......		1,700
8514	" 21	" 22	*	Little	M. F.35	......	295.6	259.2	36.4	25.6	22.8	2.8	DB.	3.2	11.8	9.9	1.9	.108	.32	.272	.048	1.364	.....	.....	.002	.16	1.3	...	......	+	5,700
8564	" 27	" 28	*	Cons'd	M. F.3	......	289.6	261.6	25.	31.2	24.4	6.8	DB.	3.8	8.4	7.9	.5	.091	.304	.24	.064	.524	.416	.108	.004	.32	1.3	....	......	+	7,900

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 46.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, MORRIS.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ign.: Tot'l	Loss on Ign.: Dis solv'd	Loss on Ign.: Sus pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis solv'd	Albuminoid Am.: Sus pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6637	Jan. 5	Jan. 8	*	Cons'd	M. F.5	......	432.	424.	8.	38.	29.6	8.4	B.	63.	22.2	17.6	4.6	7.2	1.6	.896	.704	2.76	1.88	.88	.5	.68	5.	0.	.1	?	286,000
6665	" 10	" 12	*	"	M. F.5	......	432.	418.	14.	44.4	40.	4.4	B.	85.	18.5	12.3	6.2	8.	2.	.8	1.2	3.36	1.84	1.52	.035	.44	5.	0.	5.	+	4,200,000
6703	" 16	" 18	+	"	M. F.06	......	364.	355.2	8.8	52.	48.4	3.6	B.	50.	11.	9.7	1.3	5.36	.496	.448	.048	1.76	1.04	.72	.015	1.	5.	2.	2.	+	1,850,000
6773	" 26	" 29	*	"	M. F.01	Gas'y	408.	221.6	186.4	40.1	24.8	15.6	B.	23.5	22.9	7.8	15.1	2.4	1.44	.288	1.152	3.04	.672	2.368	.03	.44	−4.9	0.	−6.	....	2,040,000
6786	" 29	" 29	*	"	M. F.03	......	306.	254.	52.	31.6	22.	9.6	G.	18.	12.1	7.4	4.7	1.76	.528	.256	.272	1.04	.48	.56	.025	.72	....		−6.	....	....
6846	Feb. 6	Feb. 7	+	Little	M. F.01	......	246.	220.	26.	16.8	16.4	.4	G.	26.5	7.7	6.2	1.5	2.24	.528	.304	.224	1.04	.64	.4	.02	.32	−3.1	0.	0.	....	130,000
6893	" 12	" 14	§	V.M'ch	M. F.5	......	598.	206.	392.	48.	22.8	25.2	B.	12.7	21.1	9.4	11.7	1.2	1.088	.304	.784	2.08	.576	1.504	.06	2.6	9.2	5.	4.	?	1,520,000
6942	" 19	" 21	*	Cons'd	M. F.04	......	277.2	239.6	37.6	51.	40.4	13.6	G.	24.	8.4	5.9	2.5	1.76	.768	.288	.48	1.68	.8	.88	.04	.92	7.9	0.	−3.	—	2,995,000
6988	" 26	" 28	*	"	M. F.04	......	265.2	214.	51.2	22.	20.4	1.6	B.	21.	9.2	6.8	2.4	1.68	.88	.352	.528	1.84	1.12	.72	.03	1.08	9.	0.	......	+	2,280,000
7037	Mar. 7	Mar. 9	+	"	M. F.03	......	301.2	268.4	32.8	23.6	17.6	6.	G.	29.5	13.7	7.3	6.4	2.8	.8	.288	.512	1.84	.608	1.232	.015	.56	6.4	1.	5.	+	1,115,000
7094	" 14	" 16	..	....	....	....	.....	.....	.....	.....	.....	....	.....	.....	....	....	....	.....	.....	....	.....	.....	.....	.....	....		16.6	0.	−3.	+	1,420,000
7123	" 19	" 21	*	Much	M. F.30	......	289.6	188.8	100.8	25.2	20.4	4.8	B.	13.2	16.1	9.3	6.8	1.28	.96	.336	.624	1.64	.824	.816	.05	1.2	....	....	0.	+	3,050,000
7187	" 28	" 30	*	Cons'd	M. F.30	......	221.6	192.4	29.2	16.8	14.8	2.	B.	12.	15.4	8.8	6.6	1.12	.448	.304	.144	1.144	.824	.32	.04	.88	12.5	1.	−1.	+	790,000
7229	Apr. 3	Apr. 4	*	"	M. F.15	......	372.8	190.4	182.4	32.1	20.4	12.	B.	10.1	15.8	8.3	7.5	.72	.656	.352	.304	1.432	.728	.704	.021	2.2	11.6	6.	9.	+	660,000
7273	" 9	" 11	*	"	M. F.05	......	279.2	236.4	42.8	16.	15.2	.8	B.	19.8	13.5	7.4	6.1	1.76	.48	.32	.16	1.4	.856	.544	.06	.88	7.5	8.	5.	+	280,000
7335	" 16	" 18	*	"	M. F.01	......	333.6	252.	81.6	30.4	14.	16.4	B.	26.1	11.	7.1	3.9	2.16	.48	.24	.24	1.304	.664	.64	.03	.68	5.8	9.	15.	+	475,000
7396	" 23	" 24	+	Little	M. F.03	......	270.	234.	36.	28.	19.6	8.4	B.	16.7	8.7	7.	1.7	2.4	.496	.272	.224	1.048	.696	.352	.05	.8	6.	10.	15.	+	115,000
7141	" 30	May. 2	+	Cons'd	M. F.07	......	334.1	304.	30.1	38.	32.8	5.2	B.	18.2	9.3	7.7	1.6	4.32	.48	.32	.16	1.12	.84	.28	.04	.44	4.4	15.	21.	+	40,000
7476	May 8	" 9	+	"	M. F.01	......	215.6	200.4	15.2	20.4	20.	4.	B.	18.	7.7	7.2	.5	2.24	.384	.272	.112	.84	.52	.32	.04	.36	4.4	14.	23.	+	75,000
7559	" 15	" 17	+	"	M. F.02	......	245.2	229.2	16.	29.6	28.	1.6	B.	20.1	7.3	6.2	1.1	2.8	.32	.176	.144	.836	.516	.32	.125	.4	4.5	18.	28.	+	48,000
7588	" 21	" 23	ǀ	Little	M. F.1	......	272.	249.6	22.4	13.6	32.1	11.2	B.	25.	7.8	7.5	.3	2.	.148	.32	.128	.644	.48	.161	.125	.6	3.6	16.	17.	+	41,000
7620	" 28	" 29		"	M. F.04	......	206.8	191.6	15.2	18.8	18.4	.4	B.	21.	6.2	6.	.2	1.92	.288	.224	.064	.68	.612	.068	.085	.72	4.3	16.	23.	+	27,000
7657	June 1	June 6	+	Cons'd	M. F.03	......	257.2	205.6	51.6	34.4	27.6	6.8	G.	17.	9.1	6.8	2.3	1.44	.4	.304	.096	.964	.68	.284	.125	1.4	5.3	17.	23.	?	241,000
7705	" 11	" 12	+	Little	M. F.03	......	264.	254.	10.	20.8	20.4	.4	B.	25.	7.2	6.4	.8	2.16	.32	.272	.048	.8	.48	.32	.2	.96	4.	19.	20.	—	291,000
7743	" 18	" 20	*	Cons'd	M. F.01	M'sty	229.6	227.6	2.	23.6	22.	1.6	B.	21.	6.8	5.8	1.	2.08	.272	.128	.144	.58	.388	.192	.08	.32	3.9	18.	25.	+	92,000
7790	" 26	" 28	‡	Little	T. F.01	"	258.	235.6	22.4	21.6	20.8	.8	B.	22.	6.9	6.2	.7	2.04	.24	.224	.016	.484	.42	.064	.16	.6	4.3	21.	30.	?	357,500
7850	July 5	July 7	ǀ	V.Sl'ht	T. F.02	"	218.4	226.8	21.6	38.	30.4	7.6	B.	19.5	8.1	4.6	3.5	1.2	.192	.176	.016	.612	.404	.208	.4	.68	3.6	26.	......	?	13,500
7887	" 9	" 11	*	Little	T. F.03	"	313.2	321.2	22.	28.1	28.	.4	B.	61.5	12.	6.7	5.3	3.68	.288	.208	.08	.516	.42	.096	.23	.52	3.6	19.	......	?	27,000
7914	" 17	" 18	+	"	T. F.	"	240.1	221.6	18.8	27.2	26	1.2	B.	25.	6.8	6.7	.1	1.64	.288	.144	.144	.74	.484	.256	.275	.72	3.5	21.	......	?	40,000
8012	" 23	" 24	+	"	T. F.	"	244.4	216.8	27.6	21.1	23.6	.8	G.	25.	7.7	5.4	2.3	2.04	.272	.096	.176	.76	.42	.31	.18	.52	3.9	21.	......	?	89,000
8062	" 31	Aug. 1	*	Much	T. F.02	......	337.2	191.6	145.6	44.8	28.	16.8	B.	17.	12.5	5.2	7.3	1.216	.132	.192	.24	1.14	.58	.56	.18	.76	4.9	18.	......	?	56,000
8128	Aug. 7	" 9	*	Little	T. F.01	......	254.8	233.6	21.2	13.2	38.8	4.4	G.	26.	6.6	4.	2.6	2.56	.288	.192	.096	.648	.488	.16	.13	.44	3.9	20.	......	+	89,000
8191	" 11	" 16	*	"	T. F.01	....	240.8	196.	44.8	20.4	19.6	.8	B.	23.5	7.4	3.6	3.8	1.84	.448	.128	.32	.932	.3	.632	.15	.56	4.	....	......	+	75,000
8247	" 20	" 22	*	"	M. F.02	SlGas	260.8	226.	34.8	22.8	22.	.8	B.	18.	5.8	5.1	.7	1.12	.368	.24	.128	.796	.252	.544	.22	1.64	5.5	7.	......	—	20,000
8338	" 30	" 31	*	"	M. F.04	"	309.6	230.8	78.8	35.2	26.	9.2	B.	19.	12.5	4.4	8.1	1.536	.576	.224	.352	1.052	.332	.72	.08	.68	5.5	0.	......	?	113,000
8382	Sept 5	Sept. 6	+	Cons'd	M. F.02	M'sty	269.6	227.2	42.4	25.6	14.4	11.2	DB.	22.	8.4	4.	4.4	1.536	.432	.224	.208	.924	.4	.524	.225	.68	....	....	......	+	2,400,000
8131	" 10	" 11	+	Little	F.04	"	250.4	246.4	4.	22.	19.6	2.4	DB.	29	7.6	4.8	2.8	2.4	.256	.24	.016	.588	.544	.044	.15	.46	3.3	0.	......	+	80,000
8505	" 19	" 20	..	....	F.15	.....	266.	263.2	2.8	22.	21.6	.4	DB.	26.	8.9	6.7	2.2	2.72	.336	.272	.064	.54	.....	.....	.006	.48	1.1	8.	......	+	9,500
8541	" 25	" 26	*	Little	M. F.05	Gas'y	269.2	238.	31.2	27.6	26.	1.6	B.	29.	8	4.	4.	4.48	.544	.112	.432	.924	.4	.524	.08	.36	3.8	2.	......	?	9,500
8626	Oct. 4	Oct. 6	*	Cons'd	M. F.02	......	272.4	194.8	77.6	26.	18.4	7.6	B.	23.	9.5	4.6	4.9	1.6	.4	.176	.224	.928	.464	.464	.12	.28	....	0.	......	+	3,100

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. ǀ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 47.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—FOX RIVER, OTTAWA.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n.: Tot'l	Loss on Ig'n.: Dissolv'd	Loss on Ig'n.: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6629	Jan. 4	Jan. 5	†	Little	M. F.03	......	460.	450.	10.	81.2	76.4	4.8	B.	9.9	6.8	6.4	.4	.072	.224	.208	.016	.68	.52	.16	.006	.56	3	2.	2.	+	3,350
6678	" 11	" 12	‖	"	F.02	......	318.8	307.2	11.6	49.2	42.4	6.8	B.	6.5	4.5	4.3	.2	.084	.176	.16	.016	.56	.352	.208	.009	.32	3.6	2.	2.	+	8,750
6725	" 18	" 20	†	"	F.02	......	311.6	310.4	1.2	60.4	60	.4	B.	7.3	4.5	4.5	0.0	.092	.176	.128	.048	.48	.32	.16	.013	.56	3.	3.	3.	+	14,800
6772	" 25	" 27	‖	Cons'd	M. F.15	......	292.4	258.8	33.6	44.4	36.4	8.	B.	4.5	8.3	7.6	.7	.32	.352	.32	.032	.88	.672	.208	.022	1.52	4.	4.	4.	+	22,200
7076	Mar. 12	Mar. 14	*	Much	M. F.50	......	202.8	160.4	42.4	29.6	23.2	6.4	B.	3.8	11.6	8.2	3.4	.324	.352	.288	.064	1.04	.608	.432	.012	.72	4.	5.	4.	+	150,000
7128	" 20	" 22	*	Cons'd	M. F.30	...	218.	178.4	39.6	19.2	16.4	2.8	B.	3.6	9.4	8.7	.7	.332	.352	.256	.096	.84	.728	.112	.014	.84	4.	3.	2.	—	56,000
7175	" 27	" 29	*	Much	M. F.30	......	281.6	173.6	108.	30.8	26.	4.8	B.	3.1	15.1	9.4	5.7	.38	.576	.256	.32	1.24	.632	.608	.015	.68	4.	2.	7.	+	46,500
7232	Apr. 3	Apr. 5	*	"	M. F.30	......	626.8	131.2	495.6	34.	17.2	16.8	B.	2.8	23.5	9.4	14.1	.26	1.024	.288	.736	2.2	.792	1.408	.022	1.6	4.	3.	16.	—	245,000
7288	" 10	" 12	*	Cons'd	M. F.15	......	286.4	199.2	87.2	31.2	22.	9.2	B.	2.2	11.	9.	2.	.144	.512	.24	.272	1.08	.664	.416	.02	1.16	4.	3.	11.	—	12,500
7340	" 17	" 19	*	"	M. F.03	......	297.2	226.8	70.4	35.6	33.2	2.4	B.	3.8	9.6	9.	.6	.064	.432	.208	.224	1.08	.6	.48	.018	.76	5.	4.	4.	—	20,500
7408	" 24	" 26	†	Much	M. F.	......	302.8	256.8	46.	28.8	28.	.8	B.	4.	11.2	8.8	2.4	.072	.64	.288	.352	1.368	.792	.576	.011	.32	4.6	....	27.	—	4,000
7449	May 1	May 3	*	Cons'd	M. F.06	......	302.8	250.	52.8	36.4	30.	6.4	B.	4.8	15.8	9.8	6.	.024	.64	.368	.272	1.188	.708	.48	.001	.2	4.	27.	27.	—	2,500
7489	" 8	" 10	*	"	M. F.04	......	402.8	251.2	151.6	32.	30.	2.	B.	4.6	15.5	10.3	5.2	.052	.592	.288	.304	1.16	.612	.548	.015	.36	3.6	19.	19.	+	18,200
7517	" 15	" 17		....	M. F.1	......	300.8	285.2	15.6	52.8	51.2	1.6	B.	6.6	8.9	8.5	.4	.088	.544	.288	.156	.9	.568	.332	.002	.04	3.6	22.	22.	+	1,450
7599	" 22	" 24	†	Cons'd	M. F.05	......	291.	266.	28.	53.2	52.	1.2	B.	5.3	9.4	8.4	1.	.131	.368	.224	.144	.804	.42	.384	....	.12	3.6	19.	19.	—	800
7670	June 5	June 6	†	Little	M. F.02	......	299.2	292.8	6.4	47.6	46.8	.8	B.	5.4	7.9	7.7	.2	.088	.256	.224	.032	.68	.468	.212	.011	.32	3.	23.	24.	—	1,100
7702	" 11	" 13	†	"	M. F.03	.....	326.8	312.	14.8	50.4	41.6	8.8	B.	5.3	9.3	8.3	1.	.04	.336	.288	.048	.708	.52	.188	.001	.24	3.	25.	26.	+	2,950
7745	" 18	" 20	†	"	M. F.02	......	322.4	312.8	9.6	47.6	47.2	.4	B.	6.5	6.8	6.8	0.0	.052	.224	.192	.032	.452	.....	.....	.008	.24	3.	24.	21.	+	1,650
7786	" 25	" 27	*	Much	T. F.01	......	301.2	293.2	8.	36.8	30.4	6.4	B.	5.6	6.5	6.5	0.0	.072	.368	.304	.064	.42	.296	.124	.001	.36	2.6	29.	32.	+	3,950
7820	July 2	July 4	*	Little	T. F.25	......	321.2	318.4	2.8	42.4	40.	2.4	B.	5.4	7.1	7.	.1	.04	.272	.24	.032	.452	.308	.144	.013	.16	....	26.	......	....	7,900
7892	" 9	" 11	*	"	T. F.20	......	304.	300.	4.	52.4	48.8	3.6	B.	5.2	7.	6.8	.2	.086	.192	.16	.032	.516	.42	.096	.005	.16	2.6	20.5	......	—	2,400
7937	" 16	" 17	†	"	T. F.02	......	313.6	288.4	25.2	37.6	25.6	12.	B.	7.6	7.	6.3	.7	.073	.272	.208	.064	.564	.452	.112	.005	.12	....	....	......		....
7996	" 23	" 24	*	"	T. F.02	......	316.	282.4	33.6	54.4	42.	12.4	G.	6.4	7.9	6.5	1.4	.12	.304	.144	.16	.548	.....	.....	.002	.2	2.6	28.	......	+	2,500
8047	" 30	" 31	*	Much	M. F.02	......	302.	263.	39.	45.2	30.	15.2	B.	6.6	9.2	8.1	1.1	.072	.352	.24	.112	.564	.388	.176	.005	.08	3.	23.	......	—	2,300
8137	Aug. 6	Aug. 9	*	Little	T. F.02	......	358.	286.	72.	64.8	.....	....	B.	6.2	12.1	7.6	4.5	.172	.512	.32	.192	.836	.564	.272	.005	.16	3.	33.	......	?	1,000
8171	" 13	" 15	*	"	T. F.02	......	294.8	255.6	39.2	60.4	53.2	7.2	B.	5.5	7.9	7.5	.4	.132	.368	.304	.064	.548	.46	.088	.002	.28	3.6	26.	......	—	2,700
8243	" 20	" 22	*	"	T. F.02	Sl.Gs.	301.2	232.4	68.8	43.6	34.4	9.2	B.	5.	8.9	6.1	2.8	.168	.352	.224	.128	.796	.212	.584	.036	.68	....	....	......	....	....
8296	" 27	" 28	*	"	M. F.02	......	440.4	266.8	173.6	41.6	24.8	16.8	G.	6.2	13.2	6.7	6.5	.136	.384	.144	.24	1.116	.38	.736	.001	.24	4.6	25.5	......	?	2,850
8366	Sept. 4	Sept. 5	†	Cons'd	M. F.05	......	297.6	270.	27.6	30.4	22.	8.4	B.	4.4	8.9	5.8	3.1	.110	.324	.272	.052	.488	.38	.108	.006	.28	4.	25.5	......	—	21,900
8133	" 10	" 11	†	Little	.2	......	304.4	281.2	23.2	46.	34.8	11.2	B.	4.8	8.8	7.2	1.6	.132	.432	.32	.102	.604	.576	.028	.003	.28	3.6	29.	......	—	1,250
8485	" 17	" 18		"	F.01	......	271.2	267.6	3.6	47.6	34.8	12.8	G.	5.	9.8	7.9	1.9	.064	.4	.224	.176	1.34	.672	.668	.002	.16	4.	20.5	......	—	2,150
8537	" 24	" 25	†	"	F.05	......	296.	280.4	15.6	46.8	41.6	5.2	B.	5.4	8.3	7.8	.5	.162	.352	.224	.128	.488	.....	.....	.003	.24	3.	22.	......	—	8,900
8596	Oct. 1	Oct. 2	‖	"	F.2	......	304.	288.8	15.2	55.6	40.	15.6	B.	5.8	8.	7.6	.4	.084	.48	.288	.192	.48	.....	.....	....	.16	3.6	21.	......	—	3,650
8635	" 6	" 8	‡	"	F.01	......	299.6	291.6	8.	46.	35.6	10.4	Bh.	5.6	8.8	7.7	1.1	.142	.432	.416	.016	.61	.512	.128	.002	.038	....	....	......	—	4,700

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 48.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, OTTAWA.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turbidity.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspnd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter
6628	Jan. 4	Jan. 5	+	Cons'd	M. F.07	......	414.4	410.	4.4	39.6	38.	1.6	B.	39.	14.8	13.6	1.2	4.8	.656	.464	.192	1.56	.936	.624	.2	2.2	3.6	2.	2.	+	10,000
6677	" 11	" 12	+	"	M. F.07	......	364.4	352.8	11.6	37.2	33.6	3.6	B.	40.	11.2	9.4	1.8	4.4	.736	.512	.224	1.44	.56	.88	.13	1.28	3.	2	2.	+	300,000
6721	" 18	" 20	+	"	M. F.04	......	351.2	334.	17.2	24.6	24.	.6	B.	31.	9.3	8.5	.8	3.2	.512	.368	.144	.96	.8	.16	.035	1.48	3.6	3.	3.	+	93,000
6771	" 25	" 27	*	"	M. F.06	......	330.4	278.4	52.	38.4	37.6	.8	B.	25.	11.5	6.6	4.9	2.56	1.056	.32	.736	1.92	.672	1.248	.035	1.08	5.6	4	4.	?	622,000
6844	Feb. 5	Feb. 7	+	Little	M. F.03	......	236.	235.2	.8	20.4	19.2	1.2	B.	21.	7.4	5.9	1.5	1.76	.416	.256	.16	.88	.544	.336	.02	.72	5.6	0.	3.	....	101,000
6949	" 20	" 22	*	Cons'd	M. F.20	......	312.	290.4	21.6	46.4	28.8	17.6	G.	17.	9.1	7.9	1.2	1.76	.496	.304	.192	.8	.576	.224	.06	2.6	5.6	3	16.		355,000
7024	Mar. 5	Mar. 7	+	Little	M. F.30	......	326.4	324.	2.4	28.4	26.	2.4	B.	19.	11.5	10.6	.9	1.76	.384	.32	.064	.896	.704	.192	.044	2.	5.	3.	3.		160,500
7077	" 12	" 14	*	Much	M. F.04	......	262.4	166.	96.4	24.	16.8	7.2	B.	8.5	12.6	6.3	6.3	.864	.512	.256	.256	1.28	.48	.8	.022	1.48	5.	5.	4.	+	220,500
7127	" 20	" 26	+	Cons'd	M. F.02	......	194.8	184.	10.8	7.2	6.8	.4	B.	3.2	4.1	3.6	.5	.576	.176	.144	.032	.392	.344	.048	.032	1.04	3.	3.	—2.	—	6,000
7174	" 27	" 29	+	Little	F.04	......	315.6	309.2	6.4	34.8	30.8	4.	G.	8.	15.1	9.1	5.7	1.2	.352	.224	.128	.76	.6	.16	.07	3.2	5.	2.	7.	—	80,000
7231	Apr. 3	Apr. 5	+	"	M. F.03	......	380.4	368.	12.4	15.6	12.	3.6	B.	7.2	8.1	7.9	.2	1.12	.336	.256	.08	.728	.6	.128	.06	1.76	5.	3.	16.	—	245,000
7289	" 10	" 12	*	Cons'd	M. F.15	......	391.6	382.8	8.8	16.8	14.4	2.4	B.	8.9	10.3	9.3	1.	1.2	.512	.32	.192	1.112	.792	.32	.09	2.8	5.	3.	11.	—	7,000
7339	" 17	" 19	*	"	M. F.04	......	422.8	418.8	4.	36.8	33.2	3.6	B.	8.3	12.6	11.3	1.3	.608	.768	.44	.328	1.72	1.08	.64	.08	2.4	4.	4.	4.	—	5,000
7407	" 24	" 26	+	"	M. F.	......	379.2	366.8	12.4	29.2	29.2	0.0	B.	7.4	12.2	11.2	1.	.24	.96	.528	.432	1.88	1.016	.864	.07	1.04	3.6	....	27.	—	17,000
7418	May 1	May 3	*	"	M. F.10	......	336.4	251.2	85.2	26.8	16.4	10.4	B.	11.4	14.2	9.1	5.1	.56	.48	.288	.192	1.12	.8	.32	.14	1.48	3.6	27.	27.	—	12,000
7488	" 8	" 10	+	"	M. F.03	......	269.2	228.	41.2	33.6	25.2	8.4	B.	16.2	9.1	8.1	1.	1.12	.416	.288	.128	.96	.68	.28	.3	.92	3.	19.	19.	+	38,000
7546	" 15	" 17		....	M. F.05	......	302.	278.	24.	44.4	42.	2.4	B.	18.4	9.3	8.	1.3	.576	.416	.224	.192	1.06	.484	.576	.35	1.68	3.	22.	22.	+	6,500
7598	" 22	" 24	+	Cons'd	M. F.05	......	280.	258.8	21.2	42.	35.2	6.8	B.	14.2	8.5	7.3	1.2	.48	.24	.128	.112	.804	.612	.192	.02	1.4	3.	19	19.	+	1,000
7671	June 5	June 6	*	"	M. F.03	......	259.6	217.2	42.4	42.	36.	6.	B.	18.	8.6	6.	2.6	.704	.288	.128	.16	.74	.468	.272	.55	1.76	3.	23.	21.	+	8,000
7701	" 11	" 13	+	Little	M. F.03	......	308.4	288.8	19.6	42.8	27.2	15.6	B.	27.	8.7	7.7	1.	1.04	.288	.16	.128	.74	.48	.26	.5	2.8	3.	25.	26.	+	31,900
7711	" 18	" 20	+	"	M. F.01	M'sty	257.2	240.	17.2	26.	26.	0.0	B.	23.	6.6	6.2	.4	1.36	.224	.192	.032	.532	.372	.16	.18	1.2	3	25.	25.	—	8,800
7785	" 25	" 27	‡	Much	T. F.01	"	235.2	230.8	4.4	34.	31.6	2.4	G.	23.	5.7	5.1	.3	.656	.256	.192	.064	.528	.484	.044	.45	1.2	3.6	29.	32.	—	8,250
7819	July 2	July 4	*	Little	T. F.03	"	249.2	243.2	6.	27.6	22.8	4.8	B.	22.5	7.2	5.8	1.4	.210	.208	.16	.048	.156	.28	.176	.8	2.16	3.6	25.5	......	....	1,150
7894	" 9	" 11	*	"	T. F.10	......	256.8	243.2	13.6	35.2	25.6	9.6	B.	25.	5.7	4.7	1.	.496	.176	.144	.032	.484	.292	.192	.425	1.86	3.6	22.	......		2,800
7936	" 16	" 17	+	"	T. F.02	......	417.6	261.2	156.4	40.4	31.6	8.8	B.	27.	5.4	4.8	.6	.376	.176	.112	.064	.484	.244	.24	.4	1.64	....	....	......	....	......
7997	" 23	" 24	*	"	T. F.02	......	238.4	217.2	21.2	19.2	17.6	1.6	G.	22.	6.9	5.1	1.8	.336	.176	.096	.08	.596	.452	.144	.325	1.18	3.6	25.	......	?	1,900
8046	" 30	" 31	*	"	T. F.02	......	261.6	238.4	23.2	28.	28.	0.0	B.	20.	7.6	6.9	.7	.704	.272	.192	.08	.628	.42	.208	.4	1.68	4.	24.	......		7,450
8138	Aug. 6	Aug. 9	*	"	T. F.02	......	236.4	217.2	19.2	35.2	.....	....	G.	22.	6.3	5.	1.3	.144	.288	.272	.016	.546	.468	.048	.6	1.72	3.6	30.	......		32,000
8170	" 13	" 15	*	"	T. F.04	......	218.4	192.4	16.	36.	19.2	16.8	G.	21.	4.8	3.9	.9	.704	.272	.176	.096	.52	.284	.236	.325	1.44	4.6	25.5	......	+	48,000
8242	" 20	" 21	*	"	T. F.02	Sl.Gs.	226.4	224.	2.4	34.8	14.8	20.	G.	22.	6.1	4.3	1.8	.576	.21	.114	.096	.51	.332	.208	.45	1.52	4.6	38.	......	—	1,900
8297	" 27	" 28	*	"	T. F.01	......	280.8	250.4	30.4	21.6	20.8	.8	B.	32.	6.9	4.7	2.2	1.80	.192	.192	.000	.732	.62	.112	.475	1.12	5.	24.	......	?	4,800
8365	Sept. 4	Sept. 5	+	Cons'd	M. F.03	M'sty	234.8	220.	14.8	20.	17.2	2.8	G.	20.	6.1	4.5	1.6	.288	.27	.208	.062	.344	.28	.064	.3	1.68	4.6	25.	......		6,300
8432	" 10	" 11	+	Little	F.1	......	300.	282.8	17.2	31.6	27.2	4.4	B.	28.	8.7	6.	2.7	.576	.32	.304	.016	.764	.496	.268	.5	1.8	4.	27.	.....		6,600
8484	" 17	" 18		"	F.02	Gas'y	248.4	231.2	17.2	28.	19.2	8.8	G.	29.	7.7	4.1	3.6	2.24	.4	.192	.208	.764	.32	.444	.017	1.04	4.3	19.	......	—	117,000
8536	" 24	" 25	+	"	F.08	.....	321.	320.8	.2	38.8	26.	12.8	G.	54.	8.1	6.7	1.4	4.8	.48	.224	.256	.7	.64	.06	.3	1.28	3.6	21	......	?	9,600
8595	Oct. 1	Oct. 2		"	F.04	......	223.6	217.2	6.4	20.8	19.6	1.2	G.	27.	5.2	4.3	.9	1.52	.288	.128	.16	.528	.368	.16	.275	1.28	4.3	19	.....	?	6,600
8634	" 6	" 8		"	F.03	......	211.6	198.	13.6	22.4	19.2	3.2	Bh.	22.	5.6	4.6	1.	1.216	.192	.....	.....	.512	.304	.208	.25	.87	....	....	......	+	2,250

TURBIDITY—*Decided. § Very Decided. + Distinct. ‡ Very Slight. Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 49.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—BIG VERMILLION RIVER, LA SALLE.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6604	Jan. 2	Jan. 3	+	Little	F.02	......	584.8	584.	.8	36.8	33.6	3.2	B.	24.	5.8	4.7	1.1	.176	.128	.12	.008	.472	.152	.32	.048	8.	....	....	......	—	20,800
6651	" 9	" 10	+	"	M. F.03	......	738.8	728.4	10.4	91.6	90.	1.6	G.	37.	3.	3.	0.0	.468	.144	.112	.032	.32	.256	.064	.036	5.2	....	....	......	—	27,400
6693	" 16	" 17	‖	"	F.02	......	576.	541.6	34.4	62.	37.2	24.8	B.	23.	9.6	9.4	.2	.24	.104	.096	.008	.352	.192	.16	.032	3.8	....	....	......	+	2,150
6743	" 23	" 24	*	Cons'd	M. F.03	......	407.6	333.6	74.	47.6	4.6	1.6	B.	10.	9.2	3.9	5.3	.096	.192	.128	.064	.448	.32	.128	.018	4.8	....	....	......	+	10,400
6790	" 30	" 31	+	Little	M. F.01	......	469.2	454.4	14.8	37.2	36.8	.4	G.	12.5	3.7	3.6	.1	.144	.128	.112	.016	.32	.256	.064	.035	6.	....	....	......	—	8,000
6850	Feb. 6	Feb. 7	+	"	M. F.01	......	601.6	596.8	4.8	70.	66.4	3.6	G.	22.2	3.	2.9	.1	.192	.128	.12	.008	.32	.288	.032	.03	5.6	....	....	......	....	3,550
6895	" 13	" 14	*	Much	VM. F.06	....	631.6	245.6	386.	96.8	39.6	57.2	B.	5.	18.2	5.9	12.3	.128	.704	.256	.448	1.6	.544	1.056	.024	6.	....	....	......	—	48,900
6910	" 20	" 21	+	Little	M. F.03	......	373.6	366.	7.6	45.6	39.6	6.	G.	7.8	8.9	8.8	.1	.08	.144	.128	.016	.....	.....	.....	.017	7.6	....	....	......	+	25,200
6988	" 27	" 28	*	Cons'd	M. F.50	......	287.6	224.	63.6	72.	35.2	36.8	B.	5.3	7.9	7.3	.6	.112	.21	.208	.032	.8	.544	.256	.016	4.8	....	....	......	+	106,000
7029	Mar. 6	Mar. 7	+	Little	M. F.05	......	361.2	354.8	6.4	28.	24.4	3.6	G.	10.2	5.3	5.2	.1	.176	.144	.112	.032	.352	.256	.096	.017	5.4	....	....	......	+	19,000
7073	" 13	" 14	§	V. M'ch	VM. F.60	......	580.8	87.2	493.6	54.8	14.8	40.	B.	1.	27.7	11.8	15.9	.32	.96	.432	.528	2.32	.832	1.488	.011	.4	....	....	......	—	312,500
7121	" 20	" 21	*	Cons'd	M. F.03	......	391.2	205.2	186.	38.	20.	18.	B.	4.6	12.9	5.8	7.1	.08	.418	.24	.208	.856	.376	.48	.014	3.6	....	....	......	—	68,000
7168	" 27	" 28	*	"	M. F.03	......	307.6	288.	19.6	32.8	29.6	3.2	G.	5.7	4.8	4.1	.7	.08	.16	.128	.032	.504	.408	.096	.015	5.6	....	....	......	+	13,000
7223	Apr. 3	Apr. 4	*	"	M. F.50	......	605.2	231.8	370.4	37.2	26.8	10.4	G.	3.7	12.8	6.2	6.6	.048	.608	.16	.448	1.336	.568	.768	.017	5.4	....	....	......	—	101,000
7275	" 10	" 11	+	Little	M. F.01	......	350.8	326.8	24.	38.8	38.	.8	B.	5.7	5.5	3.9	1.6	.02	.128	.096	.032	.376	.12	.256	.02	6.	....	17.6	......	+	11,500
7332	" 17	" 18	+	Cons'd	M. F.01	......	349.2	332.8	16.4	39.2	26.8	12.4	B.	6.3	3.7	3.4	.3	.048	.096	.088	.008	.312	.28	.032	.018	5.6	....	....	......	+	12,000
7400	" 24	" 25	*	"	M. F.02	......	336.8	299.6	37.2	43.2	41.6	1.6	B.	6.	5.2	4.	1.2	.04	.144	.096	.048	.408	.216	.192	.018	6.6	....	....	......	+	7,500
7445	May 1	May 2	‖	Little	F.02	......	381.2	374.8	6.4	34.	28.4	5.6	B	9.	3.2	3.1	.1	.012	.096	.096	0.0	.....	.....	.....	.025	5.2	....	14.8	......	—	1,350
7481	" 8	" 9	*	Much	M. F.15	......	512.4	297.6	214.8	45.2	43.2	2.	B.	8.6	17.1	6.6	10.5	.08	.496	.192	.304	1.092	.484	.608	.03	4.	....	....	......	+	100,500
7527	" 15	" 16		....	....	......	390.8	364.8	26.	44.8	44.4	.4	G.	12.	4.4	3.6	.8	.052	.128	.048	.08	.356	.26	.096	.02	4.		14.	......	+	2,100
7582	" 22	" 23	‡	Little	M. F.01	......	425.6	395.6	30.	59.6	42.	17.6	B.	12.4	4.	3.4	.6	.031	.192	.128	.064	.356	.26	.096	.016	2.8	....	11.4	......	—	4,300
7618	" 29	" 30	+	"	M. F.03	......	435.2	400.	35.2	78.	77.6	.4	B.	16.	5.6	4.2	1.4	.054	.224	.112	.112	.48	.36	.12	.025	3.36	....	....	......	+	3,100
7660	June 5	June 6	+	"	M. F.02	......	349.2	336.4	12.8	61.2	60.	1.2	G.	7.5	4.5	4.1	.4	.032	.208	.144	.064	.388	.28	.108	.03	5.2	....	....	......	+	3,500
7700	" 12	" 13	+	"	M. F.02	......	369.2	358.	11.2	65.6	59.6	6.	B.	7.8	5.	4.8	.2	.04	.208	.16	.048	.52	.324	.196	.015	5.6	....	11.8	......	+	3,600
7748	" 19	" 20	‡	"	M. F.03	......	463.6	427.2	36.4	66.	54.	12.	B.	17.	3.9	3.6	.3	.014	.112	.096	.016	.292	.176	.116	.016	3.4	....	....	......	+	4,100
7778	" 26	" 27	*	Much	M. F.30	......	485.6	194.4	291.2	41.6	25.2	16.4	B.	2.7	19.2	9.1	10.1	.047	.608	.176	.432	1.384	.468	.916	.014	1.32	....	....	......	...	22,700
7826	July 3	July 4	*	Little	T. F.01	......	408.	325.6	82.4	14.8	44.4	.4	B.	8.2	7.1	5.	2.1	.094	.192	.16	.032	.716	.336	.38	.017	3.28	....	....	......	....	17,800
7888	" 10	" 11	*	"	T. F.03	......	382.8	378.	4.8	42.	37.6	4.4	B.	11.7	5.2	3.8	1.4	.044	.144	.128	.016	.548	.292	.256	.014	2.6	....	10.4	......	—	1,000
7941	" 17	" 18	+	"	T. F.	......	471.2	461.	7.2	69.6	62.4	7.2	G.	21.2	4.4	4.2	.2	.057	.176	.08	.096	.708	.328	.38	.013	2.6	....	10.	......	?	1,700
8009	" 24	" 25	+	"	T. F.01	......	570.	535.6	34.4	78.8	58.4	20.4	G.	27.2	4.8	3.3	1.5	.098	.176	.064	.112	.34	.212	.128	.014	1.44	....	10.6	......	?	1,900
8061	" 31	Aug. 1	*	"	T. F.01	......	549.2	548.	1.2	56.	52.8	3.2	B.	32.5	3.6	3.3	.3	.104	.224	.208	.016	.42	.356	.064	.008	.76	....	12.2	......	+	1,100
8110	Aug. 7	" 8	*	"	T. F.01	......	635.2	620.8	14.4	62.	67.2	....	B.	42.	4.3	4.	.3	.162	.272	.176	.096	.74	.356	.384	.005	.36	....	10.9	......	—	650
8176	" 14	" 15	*	"	T. F.01	......	652.4	604.4	48.	73.6	62.8	10.8	G.	38.	6.9	4.2	2.7	.162	.32	.192	.128	.74	.268	.472	.007	.28	....	11.1	......	+	24,000
8246	" 21	" 22	*	"	M. F.02	......	313.6	240.8	72.8	21.6	18.	3.6	B.	6.6	7.8	4.7	3.1	.148	.352	.16	.192	.924	.332	.592	.028	.88	....	11.	......	?	3,400
8312	" 28	" 29	*	"	M. F.02	......	478.	389.6	88.4	30.	23.2	6.8	DB.	14.6	7.1	3.7	3.4	.144	.272	.128	.144	.412	.252	.16	.016	.92	....	11.1	......	—	5,850
8360	Sept. 1	Sept. 5	+	Cons'd	M. F.04	......	391.2	360.	31.2	28.8	25.6	3.2	DB.	14.	5.6	3.5	2.1	.096	.208	.192	.016	.392	.272	.12	.012	.72	....	11.6	......	+	2,300
8439	" 11	" 12	+	"	F.03	......	430.8	417.6	13.2	20.8	17.2	3.6	DB.	20.7	4.7	4.	.7	.05	.368	.224	.144	.476	.384	.092	.001	.64	....	10.5	......	—	950
8488	" 18	" 19	*	"	M. F.01	......	528.4	524.4	4.	29.6	21.6	8.	DB.	32.2	5.1	5.	.1	.154	.272	.16	.112	.392	.304	.088	.001	.4	....	10.5	......	—	3,100
8540	" 25	" 26	+	"	M. F.1	.....	743.6	735.2	8.4	77.2	70.	7.2	G.	51.	4.8	3.4	1.4	.170	.272	.064	.208	.52	.304	.216	.001	.48	....	10.	......	—	2,150
8600	Oct. 2	Oct. 3	+	Little	M. F.02	......	907.2	896.4	10.8	89.6	72.	17.6	G.	57.	4.	3.4	.6	.184	.272	.144	.128	.496	.368	.128	.008	.232	....	....	......	+	2,550

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White

TABLE 50.

STREAMS EXAMINATION--CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, LA SALLE.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Dissolved.	Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	By Dissolved.	By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Dissolved.	Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6605	Jan. 2	Jan. 3	+	Cons'd	M. F.04	......	418.8	418.	.8	53.2	52.4	.8	B.	40.2	11.6	11.	.6	3.84	.64	.512	.128	1.32	1.061	.256	.065	3.52	....	....	......	+	324.000
6652	" 9	" 10	+	"	M. F.05	......	392.8	389.2	3.6	19.6	46.	3.6	B.	39.	11.	9.6	1.4	4.16	.672	.448	.224	1.56	.984	.576	.1	.2	....	....	......	+	162.000
6692	" 16	" 17	+	"	M. F.06	......	359.2	332.4	26.8	34.8	24.4	10.4	B.	24.	9.4	8.5	.9	3.2	.528	.416	.112	1.28	1.021	.256	.03	1.72	....	....	......	+	111.000
6741	" 23	" 24	*	"	M. F.15	......	327.6	270.8	56.8	32.4	32.	.4	B.	21.7	14.2	9.1	5.1	2.24	.704	.384	.32	1.76	.864	.896	.025	1.6	....	12.1	......	+	251.000
6792	" 30	" 31	*	"	M. F.05	......	254.8	239.6	15.2	18.4	14.8	3.6	G.	14.	9.4	6.9	2.5	1.36	.32	.24	.08	.8	.514	.256	.04	1.24	....	....	......	+	111.000
6852	Feb. 6	Feb. 7	†	Little	M. F.03	......	276.4	270.	6.4	30.8	29.6	1.2	G.	17.	6.7	6.7	0.0	1.28	.288	.256	.032	.608	.544	.061	.05	.76	....	....	......	....	14,000
6897	" 13	" 14	*	Much	VM. F.30	......	454.8	198.8	256.	44.8	24.	20.8	B.	11.	18.5	8.6	9.9	.896	.8	.336	.464	1.84	.736	1.101	.07	3	....	18.3	......	.. .	208.000
6939	" 20	" 21	*	Cons'd	M. F.20	......	285.6	259.2	26.4	52.8	39.6	13.2	B.	14.2	8.9	8.8	.1	1.152	.448	.304	.144	1.12	.736	.381	.035	2.6	....	14.9	......	+	582.000
6987	" 27	" 28	*	"	M. F.40	......	276.	222.8	53.2	56.8	30.8	26.	B.	14.7	8.8	7.8	1.	1.04	.448	.32	.128	1.04	.768	.272	.032	2.4	....	....	......	—	311.000
7028	Mar. 6	Mar. 7	+	"	M. F.10	......	260.	253.6	6.4	20.	16.8	3.2	B.	14.	10.6	7.9	2.7	1.088	.352	.288	.064	.896	.8	.096	.023	1.6	....	....	......	....	....
7074	" 13	" 14	§	V. M'ch	VM. F.10	......	436.8	82.	354.8	38.	14.8	23.2	B.	4.0	26.6	8.3	18.3	.368	.864	.368	.496	2.08	.64	1.41	.011	.48	....	25.3	......	+	265.000
7122	" 20	" 21	*	Cons'd	M. F.30	......	242.1	171.8	67.6	20.	20.	0.0	B.	3.5	12.6	8.9	3.7	.592	.48	.272	.208	1.16	.632	.528	.03	1.72	....	23.	......	+	695.000
7167	" 27	" 28	*	"	M. F.30	......	237.6	171.4	63.2	23.6	15.6	8.	B.	5.7	13.	9.5	3.5	.384	.432	.32	.112	1.24	.76	.48	.014	1.8	....	19.6	......	+	113.000
7221	Apr. 3	Apr. 4	*	"	M. F.10	......	412.4	180.4	232.	33.6	21.2	12.4	B.	5.6	16.7	8.5	8.2	.288	.592	.256	.336	1.301	.632	.672	.018	2.4	....	21.	......	+	225.000
7276	" 10	" 11	*	"	M. F.15	......	269.2	217.6	51.6	27.6	26.8	.8	B.	9.1	12.2	8.5	3.7	.576	.384	.256	.128	1.048	.632	.416	.035	1.76	....	17.6	......	+	56.500
7331	" 17	" 18	‡	"	M. F.10	......	274.8	236.8	38.	32.	29.2	2.8	B.	11.	9.	8.8	.2	.56	.32	.256	.064	.821	.6	.221	.038	1.32	....	15.6	......		81.000
7399	" 24	" 25	*	"	M. F.04	......	290.	260.8	29.2	29.6	27.2	2.4	G.	10.9	9.5	8.4	1.1	.72	.384	.272	.112	1.08	.76	.32	.065	1.6	....	16.	......	-	22.000
7443	May 1	May 2	+	"	M. F.20	......	299.6	262.	37.6	37.6	21.	13.6	B.	8.5	11.5	9.6	4.9	.176	.448	.288	.16	1.16	.8	.36	.08	1.52	....	11.8	......	—	4,000
7482	" 8	" 9	+	"	M. F.25	......	284.	251.4	29.6	32.4	25.6	6.8	B.	16.	13.7	8.7	5.	1.12	.48	.4	.08	1.092	.644	.448	.25	1.08	....	15.3	......	+	52.500
7528	" 15	" 16		......	......	......	276.	268.4	7.6	28.8	26.4	2.4	B.	14.2	8.4	8.1	.3	.256	.372	.256	.116	.9	.836	.064	.15	1.6	....	11.	......	+	2.150
7581	" 22	" 23	*	Little	M. F.03	M'sty	277.2	272.4	1.8	36.	35.6	.4	G.	13.9	9.5	8.6	.9	.32	.256	.224	.032	.71	.644	.096	.075	1.12	....	11.4	......	+	2,500
7617	" 29	" 30	+	"	M. F.04	......	217.6	226.4	21.2	28.	27.6	.4	B.	18.	8.3	7.2	1.1	.48	.32	.208	.112	.71	.58	.16	.175	1.68	....	11.6	......	?	3.800
7659	June 5	June 6	+	Cons'd	M. F.04	......	283.2	206.8	76.4	38.4	29.6	8.8	G.	16.	9.2	6.5	2.7	.148	.352	.208	.144	.9	.52	.38	.3	2.4	....	12.8	......	-	9.100
7699	" 12	" 13	‡	Little	M. F.03	......	302.8	281.6	21.2	20.8	16.	4.8	B.	23.	7.6	6.9	.7	.456	.272	.224	.018	.64	.52	.12	.35	2.6	....	11.8	......	—	16.500
7747	" 19	" 20	†	"	M. F.15	......	272.8	252.4	20.4	32.	21.	8.	B.	21.	17.6	6.3	11.3	.832	.32	.224	.096	.484	.452	.032	.021	1.	....	11.6	......	—	20.000
7777	" 26	" 27		"	T. F.05	M'sty	262.	236.	26	22.	21.2	.8	B.	19.5	7.7	6.4	1.3	.616	.21	.112	.128	.692	.516	.176	.22	1.28	....	12.4	......	+	3.500
7825	July 3	July 4	*	"	T. F.04	"	262.8	240.4	22.4	38.8	28.4	10.4	G.	20.	6.5	6.3	.2	.176	.192	.16	.032	.518	.484	.064	.25	1.81	....	10.6	......	....	5,750
7889	" 10	" 11	*	"	T. F.03	....	279.6	244.	35.6	26.4	22.4	4.	B.	27.	8.5	5.8	2.7	.112	.272	.176	.096	.518	.452	.096	.375	1.81	....	10.4	......	?	1.050
7942	" 17	" 18	+	"	T. F.	....	268.	238.	30	28	22.4	5.6	B.	25.	6.2	5.2	1.	.224	.192	.08	.112	.58	.436	.144	.3	2.	....	10.	......	?	2.800
8010	" 24	" 25	+	"	T. F.01	......	301.2	232.	69.2	22.	22	0.0	G.	21.	7.2	4.9	2.3	.144	.288	.112	.176	.612	.42	.192	.17	1.28	....	10.6	......	+	4.400
8060	" 31	Aug. 1	*	"	T. F.02	......	258.8	246.4	12.4	12.	10.4	1.6	G.	19.5	7.7	5.	2.7	.272	.272	.176	.096	.996	.356	.64	.18	1.32	....	12.2	......	?	3.850
8111	Aug. 7	" 8	*	"	T. F.01	M'sty	229.2	227.6	1.6	32.	31.8	....	G.	23.	7.	4.9	2.1	.272	.24	.192	.048	.52	.408	.112	.125	1.72	....	10.9	......	?	1,800
8177	" 14	" 15	*	"	T. F.01	......	220.4	204.4	16.	23.6	16.	7.6	G.	22.5	6.5	4.2	2.3	.256	.272	.192	.08	.644	.348	.296	.35	1.72	....	11.1	......	—	36.000
8245	" 21	" 22	*	"	T. F.01	......	248.4	226	22.4	31.6	18.4	13.2	G.	20.	6.9	4.6	2.3	.144	.272	.224	.048	.572	.424	.148	.2	1.44	....	11.	......	-	5.600
8311	" 28	" 29	*	"	M. F.02	Gas'y	278.4	240.	38.4	22.8	20.	2.8	G.	20.	8.1	4.6	3.5	.352	.304	.096	.208	.7	.38	.32	.175	1.64	....	11.1	......	?	17.750
8359	Sept. 4	Sept. 5	‡	Cons'd	M. F.03	......	258.8	238.8	20.	21.2	18.4	2.8	B.	19.	8.1	4.7	3.4	2.08	.256	.192	.064	.392	.232	.16	.3	1.72	....	11.6	......	—	22.500
8410	" 11	" 12	‡	Little	F.05	M'sty	278.	266.8	11.2	26.4	24.8	1.6	B.	25.	7.8	6.2	1.6	.4	.32	.16	.16	1.24	.592	.648	.325	1.72	....	10.5	......	—	4.400
8487	" 18	" 19	*	Cons'd	F.01	......	252.8	244.	8.8	27.2	17.6	9.6	B.	27.	8.	5.9	2.1	2.08	.272	.176	.096	.92	.608	.312	.018	1.08	....	10.5	......	-	38,000
8538	" 25	" 26	+	Little	F.02	......	335.2	319.2	16.	38.4	36.4	2.	G.	47.	8.2	6.6	1.6	3.28	.48	.208	.272	.824	.672	.152	.22	1.88	....	10.	......	—	4.750
8599	Oct. 2	Oct. 3	+	"	F.01	......	250.8	238.	12.8	27.6	22.	5.6	G.	24.	6.	5.2	.8	.272	.32	.256	.064	.524	.416	.108	.22	1.13	....	....	......	?	2.700

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 51.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, LA SALLE.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6606	Jan. 2	Jan. 3	†	Cons'd	M. F.01	......	560.4	554.4	6.	40.8	39.6	1.2	B.	52.	13.7	11.6	2.1	3.52	.624	.464	.16	1.48	1.16	.32	.25	3.2	...	9.6	......	+	198,000
6653	" 9	" 10	†	"	M. F.05	......	428.	423.2	4.8	37.2	33.2	4.	B.	43.	9.	8.8	.2	4.	.672	.576	.096	1.21	1.	.24	.18	1.8	....	9.9	......	+	554,000
6691	" 16	" 17	†	"	M. F.06	......	525.2	495.2	30.	54.4	38.4	16.	B.	51.	13.2	11.1	2.1	3.68	.672	.64	.032	3.2	1.76	1.44	.15	1.32	....	10.	......	+	4,000
6742	" 23	" 24	*	"	M. F.2	......	405.2	386.	19.2	30.8	28.4	2.4	B.	33.	11.8	9.3	2.5	3.2	.672	.448	.224	1.68	.896	.784	.08	1.52	....	12.4	......	+	83,500
6791	" 30	" 31	†	Little	M. F.03	......	333.6	325.2	8.4	35.2	32.4	2.8	G.	23.5	8.3	7.5	.8	1.84	.384	.32	.064	.96	.768	.192	.06	1.48	....	12.6	......	?	127,000
6851	Feb. 6	Feb. 7	†	"	M. F.	......	289.6	280.8	8.8	18.4	16.	2.4	G.	21.	6.7	...	....	1.36	.304	.224	.08	.704	.576	.128	.035	.8	....	11.4	......	....	28,000
6896	" 13	" 14	*	Much	VM. F.50	......	325.6	210.8	114.8	32.8	31.2	1.6	B.	13.	16.4	10.4	6.	1.056	.704	.384	.32	1.44	.8	.64	.035	1.32	....	18.3	......	—	44,000
6938	" 20	" 21	*	Cons'd	M. F.30	......	328.	239.2	88.8	36.	34.4	1.6	B.	12.5	13.1	10.3	2.8	1.024	.528	.432	.096	1.36	.832	.528	.035	2.2	....	14.9	......	+	438,000
6989	" 27	" 28	*	"	M. F.50	......	265.6	241.2	24.4	45.6	29.6	16.	B.	13.7	9.4	7.	2.4	1.12	.512	.448	.064	1.12	.96	.16	.035	2.4	....	15.6	......	+	168,500
7027	Mar. 6	Mar. 7	†	"	M. F.30	......	236.8	222.	14.8	25.2	16.4	8.8	B.	12.	9.8	8.6	1.2	1.024	.352	.288	.064	1.024	.736	.288	.03	1.76	....	14.6	......	—	161,500
7075	" 13	" 14	*	Much	M. F.50	......	236.4	160.4	76.	25.6	19.2	6.4	B.	6.4	15.2	10.5	4.7	.8	.544	.416	.128	1.52	.704	.816	.02	.96	....	25.3	......	+	317,500
7120	" 20	" 21	*	Cons'd	M. F.60	......	231.6	168.	63.6	30.	13.6	16.4	B.	6.8	13.8	10.6	3.2	1.184	.544	.432	.112	1.32	.952	.368	.04	1.28	....	....	......	—	272,000
7169	" 27	" 28	*	"	M. F.50	......	223.6	193.2	30.4	23.6	21.2	2.4	B.	8.4	10.8	8.7	2.1	.688	.32	.288	.032	1.08	.792	.288	.03	1.12		19.6	......	+	61,000
7222	Apr. 3	Apr. 4	*	"	M. F.25	......	284.8	241.6	43.2	19.6	19.6	....	B.	14.	10.8	8.1	2.7	.8	.32	.224	.096	.792	.664	.128	.04	1.4	....	21.	......	+	220,000
7277	" 10	" 11	*	"	M. F.15	......	375.2	333.6	41.6	21.6	18.8	2.8	B.	19.	10.8	7.5	3.3	.56	.288	.256	.032	.824	.664	.16	.075	2.6	...	17.6	......	+	112,500
7330	" 17	" 18	†	"	M. F.04	......	344.4	340.8	3.6	38.4	16.4	22.	B.	18.	8.1	8.1	0.0	.56	.288	.24	.048	.92	.664	.256	.085	2.28	...	....	......	+	257,500
7401	" 21	" 25	*	"	M. F.01	......	380.8	356.	24.8	32.	31.6	.4	G.	18.	8.6	6.5	2.1	.48	.4	.24	.16	1.144	.76	.384	.085	1.36	....	....	......	+	41,000
7444	May 1	May 2	†	Little	M. F.05	......	356.8	328.4	28.4	23.6	20.8	2.8	B.	17.	7.9	7.8	.1	.592	.4	.256	.144	.9	.644	.256	.08	1.52	....	14.8	......	+	48,000
7483	" 8	" 9	†	Cons'd	M. F.15	......	404.4	365.2	39.2	38.8	36.	2.8	B.	19.5	11.5	6.7	4.8	.72	.496	.416	.08	1.092	.772	.32	.076	1.08	....	....	......	+	53,500
7529	" 15	" 16		....	....	......	354.8	338.	16.8	38.8	34.8	4.	B.	16.5	11.1	8.	3.1	.652	.48	.288	.192	1.316	.9	.416	.05	.72	....	11.	......	+	6,000
7583	" 22	" 23	*	Little	M. F.04	Mst'y	398.4	361.6	36.8	90.	54.8	35.2	B.	17.	11.	8.4	2.6	.8	.48	.288	.192	.9	.72	.18	.06	.68	....	11.4	......	+	8,500
7619	" 29	" 30	†	Cons'd	M. F.15	......	370.	343.2	26.8	59.2	47.6	11.6	B.	16.	12.7	8.9	3.8	.592	.56	.448	.112	1.32	.74	.58	.045	.8	....	11.6	......	+	10,500
7658	June 5	June 6	†	"	M. F.15	......	352.4	316.	36.4	60.4	55.6	4.8	B.	16.	8.2	8.	.2	.736	.4	.352	.048	.964	.772	.192	.065	.56	.. .	12.8	......	?	11,700
7698	" 12	" 13	†	Little	M. F.03	......	363.2	342.4	20.8	39.6	38.8	.8	B.	15.	9.3	8.8	.5	.768	.352	.272	.08	.9	.74	.16	.06	.44	....	11.8	......	+	62,000
7746	" 19	" 20	*	Cons'd	M. F.05	......	371.6	341.6	30.	50.	46.8	3.2	B.	15.	9.3	8.5	.8	1.04	.8	.32	.48	.9	.708	.192	.023	.24	....	11.6	......	+	31,050
7776	" 26	" 27	‡	Slight	T. F.07	Mst'y	339.6	334.	5.6	19.2	44.1	4.8	B.	14.	9.	7.8	1.2	.288	.448	.304	.144	1.412	.9	.512	.028	.2	..	....	......	—	19,500
7824	July 3	July 4	*	Little	T. F.05	......	345.6	329.6	16.	61.2	52.	9.2	B.	13.	9.6	8.8	.8	.232	.48	.352	.128	.932	.516	.416	.028	.24		10.6	......	....	100,500
7890	" 10	" 11	*	"	T. F.05	......	362.4	330.8	31.6	31.	29.2	4.8	B.	15.	12.5	8.	4.5	.416	.512	.368	.144	.836	.516	.32	.017	.16	....	10.4	......	+	13,000
7913	" 17	" 18	†	"	T. F.	......	346.	325.2	20.8	11.2	37.6	3.6	B.	11.	11.1	7.9	3.2	.456	.368	.272	.096	.76	.612	.148	.014	.44	....	10.	......	....	21,000
8011	" 24	" 25	†	"	T. F.01	Gas'y	295.2	276.4	18.8	42.4	40.4	2.	G.	15.	8.9	7.	1.9	.224	.418	.24	.208	1.08	.484	.596	.008	.36	....	10.6	......	?	19,000
8059	" 31	Aug. 1	*	"	T. F.01	Sl.	327.6	305.6	22.	56.4	51.4	2.	B.	16.	8.	5.8	2.2	.408	.464	.288	.176	1.028	.548	.48	.021	.28	....	12.2	......	?	9,500
8112	Aug. 7	" 8	*	"	T. F.01	......	313.6	295.6	18.	58.	62.8	..	B.	17.	10.7	6.6	4.1	.288	.368	.304	.064	.968	.....	.....	.002	.12	....	10.9	......	?	4,000
8178	" 14	" 15	*	"	T. F.01	......	338.8	268.	170.8	57.6	54.	3.6	B.	14.5	11.7	6.5	5.2	.24	.448	.272	.176	1.028	.456	.672	.008	.36	....	11.1	......	—	40,000
8244	" 21	" 22	*	"	T. F.01	Sl.Gs.	269.2	262.4	6.8	30.	25.6	4.4	B.	17.	7.9	5.6	2.3	.56	.336	.16	.176	.732	.156	.576	.04	.76	.	11.	......	+	25,000
8310	" 28	" 29	*	"	M. F.02	"	327.2	291.6	35.6	35.2	28.	7.2	B.	15.	9.2	5.7	3.5	.368	.368	.144	.224	.892	.604	.288	.038	1.21	....	11.1	......	+	7,500
8361	Sept. 4	Sept. 5	*	Cons'd	M. F.04	......	370.4	296.	74.4	24.8	21.6	3.2	B.	13.	13.1	5.8	7.3	.32	.512	.288	.224	1.112	.604	.508	.012	.2	...	11.6	......	+	7,000
8411	" 11	" 12	*	"	M. F.04	Mst'y	332.	281.2	50.8	29.6	24.4	5.2	B.	11.	9.	6.1	2.9	.352	.432	.224	.208	.68	.336	.344	.007	.2	....	10.5	......	+	45,000
8489	" 18	" 19	*	"	M. F.01	"	335.2	284.	51.2	31.2	28.8	2.4	B.	11.	12.5	7.6	4.9	.288	.56	.288	.272	1.02	.4	.62	.007	.24	..	10.5	......	—	38,100
8539	" 25	" 26	†	Little	F.15	......	325.2	300.	25.2	51.2	48.8	2.4	B.	11.	8.8	6.8	2.	.272	.608	.224	.384	.84	.432	.408	.008	.24	....	10.	......	?	205,000
8598	Oct. 2	Oct. 3	†	"	M. F.05	......	338.4	306.8	31.6	33.2	28.8	4.4	B.	12.	8.8	7.7	1.1	.273	.576	.416	.16	.96	.736	.224	.008	.232	....	....	......	+	32,000

TURBIDITY—*Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 52.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, HENRY.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ign'n: Tot'l.	Loss on Ign'n: Dissolv'd	Loss on Ign'n: Susp'nd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Susp'd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Susp'nd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6649	Jan. 9	Jan. 10	+	Little	M. F.07	......	350.0	344.1	6.	52.8	50.	2.8	G.	30.7	8.6	8.5	.1	2.88	.48	.4	.08	.92	.664	.256	.018	3.2	7.3	0.	2	—	6,400
6694	" 16	" 17	+	Cons'd	M. F.15	......	328.8	322.4	6.4	42.8	36.	6.8	B.	28.	9.6	9.4	.2	2.56	.528	.496	.032	1.184	.704	.48	.055	1.84	6.5	0.	1		5,650
6739	" 23	" 24	*	"	M. F.15	......	316.4	272.8	43.6	32.4	30.4	2.	B.	19.	12.2	8.5	3.7	2.24	.496	.32	.176	1.2	.704	.496	.025	1.44	8.2	2.	3.	+	108,000
6776	" 29	" 30	*	"	M. F.15	......	295.2	290.	5.2	22.4	21.6	.8	G.	19.	7.9	7.7	.2	1.76	.56	.352	.208	.88	.576	.304	.025	1.6	7.6	0.	0.	—	46,400
6829	Feb. 5	Feb. 6	+	Little	F.07	......	264.8	258.8	6.	28.	25.2	2.8	B.	15.	8.2	6.9	1.3	1.2	.432	.224	.208	.88	.544	.336	.025	.92	....	....	12	....	......
6888	" 12	" 13	*	Much	M. F.50	......	448.	197.6	250.4	38.8	20.8	18.	B.	9.	17.7	9.4	8.3	.8	.736	.352	.384	1.84	.896	.944	.018	1.52	11.2	0.	4.	+	187,000
6930	" 19	" 20	*	Cons'd	M. F.50	......	325.6	218.4	107.2	32.4	32.	.4	B.	12.	13.2	9.5	3.7	.8	.512	.352	.16	1.28	.64	.64	.026	1.08	10.7	0.	-12.	+	103,000
6983	" 26	" 27	*	"	M. F.50	......	253.6	220.	33.6	54.	29.2	24.8	B.	12.	11.4	9.5	1.9	.896	.512	.416	.096	1.12	.896	.224	.023	1.76	12.6	0.	13.	?	191,500
7020	Mar. 5	Mar. 6	+	"	M. F.40	......	262.8	250.4	12.4	13.6	12.8	.8	B.	12.2	11.5	9.8	1.7	.96	.368	.32	.048	1.04	.8	.24	.025	1.84	11.	0.	-11.	—	16,500
7061	" 12	" 13	*	"	M. F.15	......	258.4	220.8	37.6	22.4	16.4	6.	B.	10.8	10.6	7.7	2.9	1.04	.416	.272	.144	.88	.544	.336	.019	.96	15.9	0.	-1.	+	75,500
7112	" 19	" 20	*	"	M. F.30	......	313.6	112.	201.6	24.8	10.	14.8	B.	3.7	14.2	8.9	5.3	.32	.512	.224	.288	1.176	.44	.736	.012	.96	19.9	0.	4	—	505,000
7160	" 26	" 27	*	"	M. F.50	......	189.2	181.6	7.6	22.8	17.6	5.2	B.	5.9	8.7	8.1	.6	.496	.352	.24	.112	.92	.696	.224	.017	1.76	16.9	0.	3	[illegible]	137,500
7218	Apr. 2	Apr. 3	*	"	M. F.10	......	274.8	183.6	91.2	20.4	17.2	3.2	B.	5.9	12.7	8.5	4.2	.512	.416	.272	.144	.856	.664	.192	.016	1.52	17.5	4.	3.	+	90,500
7296	" 9	" 10	*	"	M. F.60	......	267.6	176.4	91.2	26.8	18.	8.8	B.	5.7	13.6	9.7	3.9	.336	.416	.288	.128	.728	.6	.128	.03	1.8	14.	4.	1.	[illegible]	42,000
7321	" 16	" 17	*	"	M. F.30	......	263.2	209.2	54.	24.4	12.8	11.6	B.	9.	11.1	8.7	2.7	.48	.32	.24	.08	1.	.76	.24	.035	1.64	13.9	1.	2	—	22,000
7389	" 23	" 24	+	"	M. F.08	......	268.4	244.8	23.6	24.4	23.2	1.2	B.	9.	9.4	7.7	1.7	.384	.384	.24	.144	1.304	.696	.608	.045	2.2	13.	10.	10.	—	5,000
7432	" 30	May 1	+	"	M. F.04	......	284.	248.	36	36.8	23.6	13.2	B.	10.5	9.1	8.8	.3	.288	.432	.288	.144	.86	.6	.26	.075	1.44	11.6	12.	11.	+	7,600
7471	May 7	" 8	+	"	M. F.05	......	325.2	268.	57.2	44.	26.8	17.2	B.	13.7	13.9	10.1	3.5	.592	.48	.32	.16	1.22	.84	.38	.15	1.2	10.	11.	17.	+	52,500
7532	" 15	" 16	..	......	......	......	301.2	282.4	18.8	36.	34.4	1.6	B.	17.	11.6	8.7	2.9	.448	.288	.192	.096	1.188	.836	.352	.15	1.4	9.8	22.	28.	—	1,100
7578	" 21	" 22	*	Little	M. F.01	M'sty	320.8	262.	58.8	35.2	30.4	4.8	B.	13.4	12.1	8.	4.1	.416	.416	.384	.032	.964	.452	.512	.11	1.2	9.	16.	19.	+	7,000
7614	" 28	" 29	+	Cons'd	M. F.15	......	287.2	252.4	34.8	39.2	33.6	5.6	B.	18.	9.6	7.6	2.	.512	.4	.24	.16	.8	.452	.348	.11	1.52	9.	29.	17.	—	3,700
7649	June 4	June 5	+	"	M. F.03	......	320.4	288.8	31.6	40.8	40.4	.4	B.	17.	9.6	6.5	3.1	.512	.32	.192	.128	.8	.644	.156	3	2.04	9.5	20.	17.	—	2,300
7694	" 11	" 12	*	"	M. F.03	......	322.	255.6	66.4	26.	22.	4.	B.	16.	12.	7.8	4.2	.368	.496	.256	.24	.96	.52	.44	.27	1.68	9.1	22.	21.	+	3,600
7736	" 18	" 19	*	"	M. F.05	......	317.2	243.6	73.6	25.2	23.6	1.6	B.	22.	11.6	6.5	5.1	.256	.4	.176	.224	1.06	.452	.608	.2	2.	7.4	20.	23.	—	3,150
7775	" 25	" 26	*	Little	M. F.04	Sl. M.	320.	237.2	82.8	34.	20.4	13.6	B.	18.	8.	4.9	3.1	.272	.304	.112	.192	.676	.308	.368	.18	1.08	7.5	22.	28.	—	1,900
7823	July 2	July 4	*	"	T. F.03	......	313.6	264.	49.6	33.6	30.	3.6	B.	18.	8.7	6.5	2.2	.216	.4	.324	.076	.964	.5	.464	.17	1.04	7	21.	......	....	96,000
7882	" 9	" 10	*	"	T. F.02	......	271.8	229.2	45.6	27.6	17.6	10.	B.	19.	7.9	5.	2.9	.16	.32	.16	.16	.612	.452	.16	.18	1.68	8.	23.	......	+	23,000
7935	" 16	" 17	+	"	T. F.02	......	286.	274.	12.	40.8	36.	4.8	B.	25.	7.	5.1	1.9	.304	.272	.112	.16	.612	.42	.192	.22	1.32	....	....	......	....	......
8003	" 23	" 24	*	"	T. F.02	......	279.6	216.	63.6	32.8	15.2	17.6	B.	24.	6.4	4.1	2.3	1.04	.24	.112	.128	.7	.372	.328	.2	1.52	7.3	21.	......	?	2,300
8103	Aug. 6	Aug. 7	*	"	T. F.02	......	254.4	231.6	22.8	34.8	34.8	0.0	B.	20.	7	5.8	1.2	.112	.304	.208	.096	.836	.436	.4	.2	1.68	7.2	28.	......	—	2,800
8166	" 13	" 14	*	"	T. F.02	......	245.2	214.	31.2	36.	34.4	1.6	G.	23.	7.5	4.4	3.1	.144	.288	.176	.112	.776	.3	.476	.225	1.68	7.3	29.	......	—	2,300
8228	" 20	" 21	*	"	T. F.01	......	278.	230.	48.	30.4	20.8	9.6	G.	21.	6.5	4.4	2.1	1.68	.304	.192	.112	.632	.428	.204	.175	1.68	8.7	28.	......	+	1,500
8304	" 27	" 28	*	Cons'd	M. F.02	Sl.Gs	268.4	254.	14.4	24.	14.8	9.2	B.	23.	7.4	4.8	2.6	.304	.272	.096	.176	.888	.356	.532	.125	1.56	8.5	27.	......	—	800
8364	Sept. 4	Sept. 5	+	"	M. F.04	......	279.6	247.2	32.4	24.4	19.6	4.8	B.	18.	7.8	4.4	3.4	.16	.32	.192	.128	.6	.396	.204	.008	1.36	8.	28.	......	—	2,100
8442	" 10	" 12	*	"	M. F.02	......	282.	252.8	29.2	23.2	19.2	4.	B.	24.	8.1	5.3	2.8	.256	.32	.192	.128	.824	.4	.424	.25	1.64	7.	28.	......	+	384,000
8530	" 24	" 25	*	Little	M. F.01	......	302.	273.6	28.4	31.6	29.2	2.4	Bh.	21.	8.9	5.5	3.4	.72	.464	.176	.288	1.34	.688	.652	.15	1.28	7.6	21.	......	—	24,000
8589	Oct. 1	Oct. 2	*	"	T. F.05	M'sty	281.2	264.4	16.8	32.	30.8	1.2	Bh.	28.	6.9	5.8	1.1	1.536	.336	.208	.128	.976	.512	.464	.15	1.36	7.6	20.	......	+	11,500

TURBIDITY—*Decided. §Very Decided. + Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—ILLINOIS RIVER, AVERYVILLE.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6603	Jan. 2	Jan. 3	†	Little	F.03	......	375.6	370.8	4.8	46.8	40.8	6.	B.	22.5	9.6	8.6	1.	1.92	.352	.272	.08	.904	.584	.32	.01	3.41	28.1	.1	2.	—	16,600
6650	" 9	" 10	†	"	M. F.03	......	369.6	364.4	5.2	60.8	60.4	.4	G.	26.	8.3	7.8	.5	2.	.384	.32	.061	.76	.6	.16	.01	3.4	28.3	2.	3.	—	28,000
6695	" 16	" 17	†	Cons'd	M. F.06	......	384.	382.4	1.6	41.2	39.6	1.6	B.	32.	9.	8.5	.5	2.96	.432	.368	.064	1.056	.8	.256	.065	2.8	28.4	2.	3.	+	3,800
6740	" 23	" 24	*	"	M. F.2	......	351.2	302.	49.2	41.6	31.4	7.2	B.	22.	12.3	8.9	3.4	2.	.4	.32	.08	1.021	.544	.48	.03	1.52	31.	3.	4.	+	21,250
6817	Feb. 6	Feb. 7	†	Little	M. F.04	......	267.2	265.6	1.6	28.8	28.	.8	G.	18.	6.5	6.3	.2	1.44	.272	.192	.08	.56	.448	.112	.025	1.4	....	....	— 1.	....	....
6898	" 13	" 14	§	V.M'ch	VM.F.3	......	476.4	178.8	297.6	48.	24.8	23.2	B.	9.	19.4	8.3	11.1	.736	.704	.288	.416	1.76	.416	1.344	.025	2.	34.6	0.	— 2.	+	129,000
6941	" 20	" 21	*	Cons'd	M. F.2	......	328.4	223.6	104.8	75.2	29.6	45.6	B.	10.	12.	9.9	2.1	1.04	.448	.384	.064	1.12	.608	.512	.03	2.2	34.6	1.	0.	+	122,000
6995	" 27	Mar. 3	*	"	M. F.03	......	343.2	281.2	62.	20.8	20.4	.4	B.	12.	12.8	9.4	3.4	1.024	.416	.208	.208	.8	.576	.224	.027	1.6	35.6	0.	— 3.	+	137,000
7023	Mar. 6	" 7	†	Little	M. F.4	......	255.6	242.8	12.8	11.4	10.8	3.6	B.	11.7	11.	8.8	2.2	.864	.32	.288	.032	.88	.64	.24	.02	2.2	34.7	0.	3.	—	84,000
7078	" 13	" 14	*	Much	M. F.4	......	327.6	189.6	138.	27.2	17.6	9.6	B.	8.4	12.6	7.1	5.5	.96	.384	.288	.096	1.12	.544	.576	.016	1.44	38.9	1.	5.	—	74,000
7124	" 20	" 21	*	"	M. F.5	......	292.	115.6	176.4	30.4	16.4	14.	B.	3.5	14.3	11.9	2.4	.384	.48	.272	.208	1.24	.6	.64	.015	1.	42.	1.	— 3.	+	154,000
7170	" 27	" 28	*	Cons'd	M. F.6	......	200.4	158.4	42.	27.6	14.4	13.2	B.	5.2	10.5	8.1	2.4	.48	.288	.256	.032	1.	.632	.368	.014	1.6	29.7	2.	3.	+	61,500
7219	Apr. 3	Apr. 4	*	"	M. F.40	......	234.8	176.4	58.4	23.2	14.4	8.8	B.	6.2	10.8	8.2	2.6	.432	.352	.288	.064	.824	.664	.16	.016	1.52	10.1	6.	9.	+	28,000
7274	" 10	" 11	*	"	M. F.30	......	268.4	180.4	88.	22.4	19.2	3.2	B.	5.6	13.7	7.7	6.	.352	.336	.24	.096	.824	.632	.192	.03	2.6	39.2	9.	3.	—	17,000
7336	" 17	" 18	*	"	M. F.20	......	230.4	214.	16.4	19.2	17.6	1.6	B.	8.1	8.7	8.5	.2	.432	.256	.208	.018	.76	.568	.192	.038	2.	36.9	10.	14.	—	5,500
7402	" 24	" 25	*	"	M. F.	......	264.8	246.8	18.	30.8	20.8	10.	B.	9.	9.	8.	1.	.32	.448	.256	.192	1.016	.632	.384	.045	2.12	36.1	14.	18.	—	1,850
7412	May 1	May 2	*	"	M. F.07	......	285.2	266.4	18.8	43.2	24.8	18.4	B.	11.	9.	8.	1.	.112	.432	.24	.192	.932	.644	.288	.06	1.76	31.8	18.	23.	—	3,500
7478	" 8	" 9	†	Little	M. F.20	......	270.	258.8	11.2	25.6	23.6	2.	B.	11.6	12.9	8.	4.9	.16	.512	.352	.16	1.092	.644	.448	.07	1.08	33.3	19.	22.	—	13,850
7549	" 16	" 17	..	....	M. F.1	......	291.8	267.6	27.2	49.2	38.8	10.4	B.	14.7	9.3	9.	.3	.384	.64	.288	.352	1.252	.676	.576	.125	1.08	32.8	22.	23.	+	22,350
7589	" 22	" 23	‖	Little	M. F.1	......	296.8	268.4	28.4	40.4	28.4	12.	B.	16.	10.8	7.2	3.6	.304	.32	.24	.08	.676	.484	.192	.1	1.28	32.1	19.	22.	—	31,000
7621	" 29	" 30	*	Cons'd	M. F.15	......	322.	255.6	66.4	26.	26.	0.0	B.	16.	8.6	8.	.6	.24	.416	.24	.176	.84	.64	.2	.07	1.2	31.9	21.	21.	+	8,900
7656	June 5	June 6	†	"	M. F.04	......	256.4	242.8	13.6	42.4	41.6	.8	G.	19.	7.	6.7	.3	.384	.304	.272	.032	.64	.452	.188	.16	1.4	32.1	23.	21.	—	3,200
7707	" 12	" 13	†	Little	M. F.04	......	262.8	212.	20.8	19.6	19.6	0.0	B.	16.	6.6	6.5	.1	.224	.24	.208	.032	.58	.52	.06	.2	2.08	31.8	23.	22.	—	2,000
7742	" 19	" 20	*	Cons'd	M. F.01	......	322.	288.4	33.6	37.6	34.4	3.2	B.	20.	9.3	6.5	2.8	.256	.272	.192	.08	.66	.58	.08	.14	1.48	30.6	22.	19.	—	550
7779	" 26	" 27	‖	Little	T. F.07	......	281.6	260.	21.6	25.2	21.2	4.	B.	20.	7.	6.8	.2	.56	.256	.16	.096	.74	.052	.688	.11	1.16	30.4	25.	24.	—	8,000
7818	July 3	July 4	*	"	T. F.03	......	282.	253.6	28.4	26.	25.2	.8	B.	20.5	7.9	7.	.9	.352	.324	.208	.116	.612	.34	.272	.19	1.48	30.5	26.	......	....	3,400
7896	" 10	" 11	*	"	T. F.10	......	302.4	260.8	41.6	42.	25.2	16.8	B.	20.	6.	5.8	.2	.128	.208	.16	.048	.564	.388	.176	.125	1.44	30.	25.	......	—	7,200
7945	" 17	" 18	..	"	.02	Mst'y	283.2	256.	27.2	25.2	24.4	.8	B.	27.	6.2	5.8	.4	.288	.176	.08	.096	1.64	.468	1.172	.22	2.	....	....	......	....	....
8013	" 24	" 25	†	"	T. F.01	......	248.8	231.2	17.6	30.4	30.4	0.0	G.	23.	6.3	4.5	1.8	.144	.224	.112	.112	.596	.42	.176	.12	1.32	29.9	26.	......	?	2,100
8063	" 31	Aug. 1	*	"	T. F.01	......	258.8	234.8	24.	41.2	34.8	6.4	G.	22.	5.5	4.4	1.1	.07	.208	.176	.032	.708	.518	.16	.22	.92	30.4	26.	.....	—	3,500
8107	Aug. 7	" 7	*	"	T. F.01	......	219.2	215.6	63.6	10.	40.	0.0	G.	19.	6.	6.4	....	.176	.272	.176	.096	.708	.468	.24	.12	1.12	30.3	28.	......	—	6,500
8175	" 14	" 15	*	"	T. F.01	......	244.	135.6	8.4	46.8	36.4	10.4	G.	21.	5.3	4.6	.7	.03	.272	.176	.096	.452	.318	.101	.125	1.12	....	....	......	....	....
8234	" 21	" 21	*	"	T. F.01	......	223.6	197.2	25.4	38.	20.4	17.6	G.	25.	5.7	4.4	1.3	.32	.272	.192	.08	.54	.284	.256	.13	1.12	31.2	28.	......	+	2,000
8309	" 27	" 28	*	"	M. F.02	......	250.	220.4	29.6	19.2	18.4	.8	G.	20.	6.7	4.6	2.1	.176	.24	.144	.096	.636	.38	.256	.1	1.12	31.	27.	......	—	4,300
8358	Sept. 4	Sept. 5	*	Cons'd	M. F.02	......	264.8	260.8	4.	18.	16.8	1.2	G.	22.	6.4	4.6	1.8	.176	.272	.192	.08	.256	.....	.....	.23	1.52	....	....	......	....	....
8437	" 11	" 11	*	Little	M. F.02	......	264.	299.6	34.4	16.4	15.2	1.2	G.	18.	7.4	4.5	2.9	.128	.256	.128	.128	.536	.384	.152	.075	1.04	30.	26.	......	—	4,900
8486	" 18	" 18	*	Cons'd	M. F.01	......	272.8	253.2	19.6	36.8	15.6	21.2	G.	20.	7.5	6.1	1.4	.144	.32	.224	.096	.....	.....	.....	.01	1.2	29.5	19.	......	—	5,100
8535	" 25	" 25	†	Little	M. F.05	......	318.	286.8	31.2	39.2	38.4	.8	Bh.	30.	8.5	6.4	2.1	.864	.352	.16	.192	.636	....	.....	.13	1.44	28.5	21.	......	—	3,400
8597	Oct. 2	Oct. 2	†	"	M. F.02	......	317.6	294.4	23.2	25.6	23.2	2.4	B.	37.	6.7	5.8	.9	1.28	.416	.224	.192	.656	.48	.176	.15	1.28	29.7	20.	......	+	1,050

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight ‖ Slight. COLOR—M., Muddy VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 54

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, WESLEY CITY.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
6632	Jan. 5	Jan. 6	+	Little	M. F.04	......	377.2	370.8	6.4	50.	48.8	1.2	B.	24.	8.2	7.6	.6	1.92	.352	.272	.08	1.	.68	.32	.04	2.96	2.	....	......	+	66,000
6661	" 11	" 12	*	Cons'd	M. F.04	......	367.2	325.2	42.	40.	15.2	24.8	B.	25.	9.	8.6	.4	1 6	.528	.352	.176	.96	.72	.24	.035	3.4	1.	....	......	+	32,000
6721	" 18	" 19	*	Much	M. F.4	......	619.6	288.8	330.8	40.4	23.6	16.8	B.	20.	17.7	9.8	7.9	1.92	.912	.32	.592	1.76	.768	.992	.045	.22	2.	....	2.6	+	168,000
6756	" 25	" 26	*	Cons'd	M. F.08	......	356.8	337.2	19.6	36.	25.6	10.4	B.	18.	12.9	8.8	4.1	2.4	.592	.368	.224	1.44	.96	.48	.022	1.32	4.	....	......	+	60,000
6788	" 30	" 31	*	"	M. F.04	......	321.2	306.	15.2	37.6	35.6	2.	G.	23.7	11.1	9.1	2.	2.4	.432	.368	.064	.96	.672	.288	.025	1.52	4.	....	......	+	119,000
6849	Feb. 6	Feb. 7	+	Little	M. F.03	......	294.8	271.2	23.6	33.6	32.4	1.2	G.	16.	7.6	6.1	1.5	1.12	.4	.224	.176	.8	.576	.224	.025	1.	4.	....	4.	....	49,000
6894	" 13	" 14	§	V Much	V M. F.	......	470.8	214.8	256.	28.4	25.2	3.2	B.	12.	15.5	7.6	7.9	1.056	.576	.272	.304	1.6	.64	.96	.027	1.28	7.	....	−7.	+	99,000
6947	" 21	" 22	*	Cons'd	M. F.50	..	330.4	214.	116.4	75.2	23.6	51.6	B.	10.	14.2	8.3	5.9	.864	.576	.32	.256	1.04	.64	.4	.04	1.88	7.8	....	−0.	?	139,000
7031	Mar. 6	Mar. 7	+	"	M. F.50	......	264.	246.	18.	33.6	31.2	2.4	B.	10.4	12.1	9.2	2.9	.8	.352	.304	.048	.96	.8	.16	.026	1.76	7.	....	−4.	+	128,000
7090	" 14	" 15	*	"	M. F.20	......	392.8	231.6	161.2	24.8	19.2	5 6	B.	30.2	13.2	7.1	6.1	.736	.416	.256	.16	1.12	.416	.704	.015	1.2	12.	....	1.	+	90,000
7138	" 20	" 22	*	Much	M. F.40	......	266.8	134.8	132.	28.4	14.4	14.	B.	3.9	13.9	6.5	7.4	.448	.48	.208	.272	1.24	.6	.64	.013	1.08	13.6	....	−6.	?	260,000
7201	" 29	" 30	*	Cons'd	M. F.10	......	209.2	151.2	58.	21.2	10.	11.2	B	7.	11.	7.	4.	.4	.288	.224	.064	.664	.536	.128	.013	1.4	11.	....	4	+	205,000
7241	Apr. 4	Apr. 5	*	"	M. F.40	......	215.2	169.6	45.6	26.	22.4	3.6	B.	6.1	11.2	8.	3.2	.4	.272	.256	.016	.632	.568	.064	.015	1.48	12.	7.	4 5	+	24,000
7284	" 10	" 11	*	"	M. F.70	......	229.6	176.8	52.8	26.8	13.6	13.2	B.	5.2	11.8	7.7	4.1	.32	.288	.208	.08	.696	.536	.16	.027	2.2	....	5.5	3.	+	36,500
7338	" 17	" 18	*	"	M. F.20	......	235.2	200.	35.2	26.	25.6	.4	B.	6.5	9.	7.7	1.3	.384	.272	.208	.064	.76	.536	.224	.04	2.1	9.	10.	18.	+	13,000
7405	" 21	" 26	+	"	M. F.	......	258.8	234.8	24.	32.	28.4	3 6	B.	9.4	8.2	7 9	.3	.176	.272	.208	.064	.824	.632	.192	.036	1.8	8.4	13.	22.	—	17,500
7464	May 2	May 4	+	"	M. F.06	......	286.	252.4	33.6	28.8	27.6	1 2	B.	10.5	14.1	8.5	5.6	.16	.528	.24	.288	1.22	.58	.64	.055	1.64	7.	15.5	21.	+	114,500
7485	" 8	" 9	+	"	M. F.10	......	437.6	262.	175.6	22.8	22.	.8	B.	10.9	13.6	7.8	5.8	.24	.592	.272	.32	1.44	.52	.92	.075	1.2	6.	17.	23.	+	48,500
7531	" 15	" 16	+	"	....	......	324.4	267.2	57.2	31.2	24.	7.2	B.	14.3	12.4	8.8	3.6	.128	.592	.256	.336	1.22	.836	.381	.075	.76	5.2	20.	29.	....	35,000
7585	" 22	" 23	*	Cons'd	M. F.05	....	325.2	286.	39.2	65.6	47.6	18.	B.	13.6	10.8	8.3	2.5	.448	.256	.224	.032	.836	.516	.32	.09	1.	4.1	16.5	24.	+	62,000
7624	" 29	" 31	*	Much	M. F.25	......	638.8	241.2	397.6	50.4	36.8	13.6	B.	14.	17.1	8.1	9.	.32	.688	.288	.4	1.92	.612	1.308	.065	.8	5.	21.	28.	—	92,000
7662	June 6	June 7	*	"	M. F.02	......	346.4	238.8	107.6	26.8	14.	12.8	B.	19.	11.	7.2	3.8	.256	.368	.176	.192	.96	.644	.316	.15	1.68	4.6	24.	36.	+	223,000
7712	" 13	" 14	+	Little	M. F.02	......	312.8	250.4	62.4	33.6	28.	5.6	B.	16.	6.9	6.2	.7	.192	.256	.192	.064	1.12	.52	.6	.15	1.88	4.	22.	26.	+	4,500
7757	" 20	" 21	*	Cons'd	M. F.05	......	327.2	288.8	38.4	32.	31.6	.4	B.	20.	7 5	7.5	0.0	.080	.256	.192	.064	.676	.452	.224	.12	1.44	3.	24.	39.	+	2,500
7791	" 27	" 28	‡	Little	T. F.01	M'sty	290.4	258.4	32.	26.	26.	0.0	B.	20.	6.5	6.2	.3	.4	.208	.192	.016	.996	.548	.448	.14	1.4	3.1	24.5	30.	+	4,000
7839	July 5	July 6	*	V Little	T. F.10	......	275.2	253.2	22.	34.4	31.2	3.2	G.	19.5	6.5	6.5	....	.208	.208	.176	.032	.518	.516	.022	.13	1.44	2.9	27.	......	+	4,000
7897	" 10	" 12	*	"	M. F.20	......	305 2	272.8	32.4	55.2	30	25.2	B.	20.	6.3	5.5	.8	.176	.208	.114	.064	.532	.34	.092	.13	1.56	2 6	25.	......	+	120,000
7959	" 18	" 19	*	Little	T. F.01	......	296.4	254.	42.4	37.2	32.8	4.4	B.	26	5.9	5.7	2	.304	.224	.16	.064	.516	.42	.096	12	1.41	2.	21.	......	+	80,000
8019	" 24	" 26	*	"	T. F.01	......	373.2	243.2	130.	42.	14.8	27.2	B.	23.	16.6	4.3	12.3	.208	.272	.112	.16	.564	.324	.24	.07	1.36	2.5	25.	......	?	180,000
8069	Aug. 1	Aug. 2	*	"	T. F.01	......	244.8	232.	12.8	27.6	25.2	2.4	G.	22.	4.1	4.3	...	.112	.208	.176	.032	.484	.436	.048	.08	1.12	2 9	21.	......	+	170,000
8139	" 9	" 10	*	"	T. F.01	......	236.8	231.2	5.6	38.4	43.2	....	G.	20.	5.7	5.	.7	.208	.288	.224	.061	.548	.436	.112	.08	.92	2.7	28.	......	+	180,000
8232	" 16	" 18	*	"	T. F.02	......	316.	209.2	106.8	35.6	32.4	3.2	G.	23.	6.3	4.1	2 2	.224	.288	.208	.08	.58	.268	.312	.12	1.12	4.	25.5	......	+	39,000
8314	" 29	" 30	*	"	T. F.01	......	285.2	235.2	50.	25.2	14.8	10.4	G.	20.	7.	4.9	2.1	.16	.304	.176	.128	54	.332	.208	.08	1.28	3.6	28.	......	+	8,000
8373	Sept. 5	Sept. 6	+	Cons'd	M.	......	306.8	252.	54.8	20.	17 2	2.8	B.	21.	7.1	4.6	2.5	.112	.24	.224	.016	.492	.268	.224	.15	1.28	3.7	25.5	......	+	10,500
8458	" 12	" 14	*	"	M. F.01	......	280.8	234.4	46.4	28.8	21.6	7.2	B.	19.	7 6	5.7	1.9	.16	.304	.192	.112	.7	.....	.....	.07	1.4	3.	21.	......	+	22,500
8493	" 19	" 20	*	"	M. F.01	......	282.4	240.4	42.	35.6	24.8	10.8	LB.	20.	7.7	6.7	1.	.176	.336	.192	.234	.7	.496	.201	.004	1.4	2.5	18.	......	+	21,500
8551	" 26	" 27	+	Little	M. F.15	......	330.4	292.	38.4	34.8	22.8	12.	LB.	29.	11.6	6.3	5.3	.8	.768	.304	.464	1.58	.848	.732	.1	1.68	1.6	22.	......	?	1,000,000
8605	Oct. 3	Oct. 4	+	"	C. F.05	......	326.4	296.8	29.6	35.2	31.2	4.	......	35.	6 6	6.2	.4	1.12	.288	.24	.048	.64	.592	.048	.17	1.96	....	....	......	?	10,000

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 55.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, PEKIN.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6631	Jan. 5	Jan. 6	†	Little	M. F.04	......	389.2	379.2	10.	44.	35.2	8.8	B.	24.5	9.5	8.6	.9	1.92	.64	.352	.288	1.32	.616	.704	.04	2.88	2.	10.	.....	?	200,000
6663	" 11	" 12	*	Cons'd	M. F.03	......	394.4	352.4	42.	48.	46.	2.	B.	25.5	9.8	9.4	.4	1.76	.56	.384	.176	1.12	.768	.352	.04	3.2	1.	0.	......	+	96,000
6723	" 18	" 19	*	Much	M. F.03	......	645.6	276.4	369.2	68.8	38.	30.8	B.	20.	17.9	9.1	8.8	2.	.912	.32	.592	1.76	1.024	.736	.045	1.5	2.	....	−1.	?	159,000
6755	" 25	" 26	*	Cons'd	M. F.04	......	364.8	334.	30.8	45.6	30.4	15.2	B.	17.	12.	8.9	3.1	2.32	.608	.352	.256	1.36	.896	.464	.027	1.36	4.	....	−12.	+	47,500
6787	" 30	" 31	*	"	M. F.03	......	329.6	302.	27.6	44.	38.4	5.6	G.	23.5	10.4	8.3	2.1	2.56	.432	.288	.144	.96	.672	.288	.025	1.68	4.	....	−17.	+	138,000
6848	Feb. 6	Feb. 7	†	Little	M. F.03	......	287.6	275.6	12.	33.6	30.	3.6	G.	16.5	7.4	6.2	1.2	1.04	.416	.208	.208	.88	.544	.336	.025	1.08	4.	....	4.	....	36,000
6892	" 13	" 14	§	V Much	V M. F.20	......	416.	206.8	209.2	38.	27.2	10.8	B.	13.	16.	7.4	8.6	.88	.608	.272	.336	1.44	.416	1.024	.03	1.32	7.	....	−7.	+	77,500
6948	" 21	" 22	*	Cons'd	M. F.40	......	324.	217.6	106.4	87.6	21.6	66.	B.	10.	14.7	8.3	6.4	.864	.56	.32	.21	1.2	.48	.72	.034	2.8	7.8	....	0.	+	138,500
7032	Mar. 6	Mar. 8	†	"	M. F.40	......	277.6	237.2	40.4	22.4	22.	.4	B.	10.8	12.1	9.1	3.	.96	.368	.288	.08	1.04	.832	.208	.027	1.84	7.	....	......	+	45,500
7091	" 14	" 15	*	"	M. F.40	......	331.2	206.4	124.8	22.4	19.6	2.8	B.	9.4	12.5	9.4	3.1	.752	.416	.24	.176	.96	.544	.416	.014	1.4	12.	....	−1.	....	79,000
7137	" 20	" 22	*	Much	M. F.50	......	275.6	148.8	126.8	20.	16.4	3.6	B.	5.4	12.7	7.2	5.5	.448	.408	.192	.216	1.08	.6	.48	.013	1.2	13.6	..	−6.	+	250,000
7202	" 29	" 30	*	Cons'd	M. F.06	......	206.	144.8	61.2	16.	15.6	.4	B.	5.3	11.4	7.4	4.	.432	.304	.192	.112	.696	.504	.192	.012	1.52	11.	....	4.	?	126,000
7240	April 4	April 5	*	Much	M. F.25	......	212.4	171.6	40.8	15.6	15.6	0.0	B.	6.	11.2	8.2	3.	.448	.272	.224	.048	.632	.532	.1	.015	1.6	12.	7.	4.	+	35,500
7283	" 10	" 11	*	Cons'd	M. F.60	......	254.8	176.	78.8	30.	15.2	14.8	B.	5.3	13.1	8.5	4.6	.368	.288	.256	.032	.728	.6	.128	.024	2.	....	5.5	3.	−	21,500
7337	" 17	" 18	*	"	M. F.30	......	230.	209.6	20.4	31.6	28.8	2.8	B.	7.	10.8	8.3	2.5	.4	.32	.208	.112	.68	.536	.144	.04	2.	9.	10.	18.	+	10,500
7401	" 21	" 26	†	"	M. F.	......	277.2	254.4	22.8	29.2	27.6	1.6	B.	8.8	8.4	7.5	.9	.176	.288	.192	.096	.824	.632	.192	.04	1.76	8.4	13.	22.	+	38,500
7465	May 2	May 4	†	"	M. F.06	......	307.6	263.6	44.	26.	26.	0.0	B.	11.1	12.	8.8	3.2	.16	.608	.356	.252	1.3	.641	.656	.07	1.68	7.	15.5	21.	?	372,500
7486	" 8	" 9	†	"	M. F.10	......	442.	262.	180.	28.4	27.2	1.2	B.	11.	13.4	7.8	5.6	.24	.592	.272	.32	1.06	.52	.54	.075	1.08	6.	17.	23.	+	37,500
7530	" 15	" 16	..	....	....	......	320.	251.8	65.2	35.6	34.8	.8	B.	14.6	12.4	8.6	3.8	.128	.48	.288	.192	1.252	.832	.42	.085	.76	5.2	20.	29.	+	25,000
7584	" 22	" 23	*	Cons'd	M. F.05	......	326.	270.	56.	43.6	30.	13.6	B.	13.2	11.3	8.8	2.5	.32	.48	.288	.192	.836	.676	.16	.1	.96	4.1	17.	24.	+	12,500
7625	" 29	" 31	*	Much	M. F.10	......	668.	241.6	426.4	47.2	37.2	10.	B.	14.	21.6	8.	13.6	.272	.72	.288	.432	2.18	.612	1.568	.07	.81	5.	21.	28.	+	85,000
7661	June 6	June 7	†	Cons'd	M. F.02	......	294.8	242.	52.8	33.2	29.6	3.6	G.	18.7	8.4	6.9	1.5	.288	.24	.192	.048	.58	.52	.06	.014	1.44	4.6	24.	35.5	+	3,000
7713	" 13	" 14	..	....	....	......	......	.....	......	....	.....	....	......	.....	....	....	....	.....	.....	.....	.....	.....	.....	.....	....	.....	4.	23.	25.5	....	....
7756	" 20	" 21	*	Cons'd.	M. F.05	......	341.2	285.2	56.	38.8	28.4	10.4	B.	20.	9.	8.	1.	.448	.352	.224	.128	.708	.57	.138	.15	1.36	3.	24.	39.	+	330,000
7792	" 27	" 28	‖	Little	T. F.01	......	298.4	261.6	36.8	36.	33.6	2.4	B.	21.	7.1	5.9	1.2	.544	.21	.224	.016	.82	.612	.208	.15	1.2	3.1	24.5	30.	....	154,000
7838	July 5	July 6	*	V Little	T. F.06	......	276.8	241.6	35.2	32.	30.4	1.6	G.	20.5	7.	6.3	.7	.312	.24	.176	.061	.516	.452	.064	.14	1.44	2.9	27.	......	?	38,500
7898	" 10	" 12	*	"	T. F.20	......	285.2	273.6	11.6	46.4	39.2	7.2	B.	19.	8.3	6.5	1.8	.368	.324	.176	.148	.628	.356	.272	.13	1.36	2.6	25.	......	+	555,000
7960	" 18	" 19	*	"	T. F.02	......	285.6	256.	29.6	36.8	36.	.8	B.	26.5	6.9	4.8	2.1	.416	.272	.176	.096	.548	.432	.116	.17	1.44	2.	25.5	......	+	370,000
8020	" 24	" 26	*	"	T. F.01	......	275.6	237.2	38.4	36.	22.4	13.6	B.	24.	6.1	5.1	1.	.272	.24	.192	.048	.628	.356	.272	.09	1.32	2.5	25.	......	?	220,000
8068	Aug. 1	Aug. 2	*	Little	T. F.01	......	266.8	222.4	42.4	32.	24.8	7.2	B.	23.	5.2	4.6	.6	.272	.272	.176	.096	.676	.436	.24	.08	1.08	2.9	27.	......	+	400,000
8140	" 9	" 10	*	"	T. F.01	......	250.8	230.4	20.4	48.8	40.	8.8	G.	20.	6.	5.3	.7	.272	.288	.272	.016	.516	.468	.048	.08	.88	2.7	28.	......	+	215,000
8201	" 16	" 18	*	"	T. F.02	Gas'y	325.2	212.8	112.4	22.	20.	2.	B.	23.	7.	4.2	2.8	.368	.368	.176	.192	.772	.38	.392	.11	.84	4.	25.5	......	+	141,000
8315	" 29	" 30	*	"	M. F.01	......	282.8	229.6	53.2	14.8	13.6	1.2	B.	19.	8.5	4.6	3.9	.256	.368	.192	.176	.796	.54	.256	.09	1.08	3.6	28.	......	+	390,000
8374	Sept. 5	Sept. 6	*	Cons'd	M.	......	300.	259.6	40.4	20.4	18.	2.4	B.	21.	7.9	4.5	3.4	.288	.288	.24	.018	.7	.492	.208	.225	1.28	3.7	25.5	......	+	1,320,000
8459	" 12	" 14	*	"	M. F.03	......	277.2	236.	41.2	27.6	19.2	8.4	G.	18.	7.9	5.7	2.2	.256	.288	.144	.144	.568	.448	.12	.1	1.08	3.	24.	......	+	600,000
8492	" 19	" 20	*	"	M. F.01	......	280.1	253.6	26.8	26.	14.4	11.6	B.	21.	8.2	6.6	1.6	.208	.384	.224	.16	.62	.608	.012	.004	1.64	2.6	18.	......	+	47,500
8542	" 26	" 27	*	"	M. F.18	......	305.2	281.2	24.	29.2	28.4	.8	B.	28.	7.8	5.7	2.1	.672	.432	.208	.224	1.02	.432	.588	.375	1.64	1.6	22.	......	+	2,280,000
8606	Oct. 3	Oct. 4	..	....	M. F.03	......	343.6	313.6	30.	41.2	31.6	9.6	Bh.	36.	7.9	7.1	.8	1.184	.432	.256	.176	.8	.704	.096	.325	1.48	....	....	......	?	740,000

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 56.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, HAVANA.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis solv'd	Loss on Ig'n. Sus pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6679	Jan. 11	Jan. 12	+	Cons'd	M. F.04	......	361.2	352.8	8.4	51.2	45.2	6.	B.	21.5	8.8	8.3	.3	1.6	.48	.304	.176	1.04	.736	.304	.04	2.4	4.6	—0.	1.	+	300,000
6752	" 24	" 25	*	"	M. F.04	......	368.	338.4	29.6	26.8	24.8	2.	B.	26.7	11.2	9.	2.2	2.56	.448	.352	.096	.88	.64	.24	.05	2.	6.7	4.	......	+	26,000
6795	" 31	Feb. 1	*	"	M. F.15	......	311.2	295.6	15.6	15.2	15.2	....	B.	23.	9.1	8.8	.3	2.4	.512	.32	.192	1.04	.64	.4	.03	2.4	7.1	0.	—15.	+	46,500
6861	Feb. 7	" 8	*	"	M. F.06	......	312.8	266.8	46.	18.	17.2	.8	B.	18.	9.3	7.	2.3	1.76	.464	.24	.224	.96	.64	.32	.027	1.36	7.4	1.	9.	+	66,800
6907	" 14	" 15	*	"	M. F.06	....	302.8	232.4	70.4	36.8	25.6	11.2	B.	15.7	9.7	7.	2.7	1.216	.416	.304	.112	.96	.576	.384	.031	1.4	10.	0.	......	—	54,500
6946	" 21	" 22	*	"	M. F.15	.....	262.8	224.4	38.4	55.6	20.	35.6	B.	12.2	10.8	7.6	3.2	.896	.544	.32	.224	.88	.64	.24	.03	1.28	10.1	2.	......	?	67,000
6996	Mar. 1	Mar. 3	*	"	M. F.06	......	290.8	230.	60.8	20.8	20.4	.4	B.	11.	13.	10.9	2.1	.864	.448	.304	.144	.88	.64	.24	.04	1.48	11.8	1.	......	—	130,000
7042	" 7	" 9	*	"	M. F.5	......	266.4	234.4	32.	32.2	28.4	8.8	B.	11.	11.7	10.9	.8	.88	.416	.288	.128	.96	.64	.32	.035	1.8	11.1	1.	......	+	79,500
7081	" 14	" 15	*	Much	M. F.2	....	1067.6	85.6	982.	14.4	11.6	32.8	B.	.8	28.2	13.1	15.1	.4	1.44	.24	1.2	3.04	.576	2.464	.01	.4	14.5	0.	......	+	365,000
7149	" 22	" 23	*	"	M. F.4	......	255.2	138.8	116.4	19.2	10.8	8.4	B.	5.5	12.1	6.9	5.2	.528	.416	.224	.192	1.24	.6	.64	.008	1.08	17.	3.	9.	?	262,500
7200	" 29	" 30	*	Cons'd	M. F.2	......	201.2	117.6	53.6	16.4	14.4	2.	B.	4.	8.6	6.1	2.5	.32	.224	.176	.048	.632	.472	.16	.017	1.38	15.2	4.	......	?	20,500
7229	Apr. 4	Apr. 5	*	"	M. F.36	.....	193.6	166.4	27.2	19.6	17.6	2.	B.	5.6	11.2	7.7	3.5	.448	.272	.208	.064	.536	.456	.08	.018	1.68	14.9	6.	7.	?	75,500
7292	" 11	" 12	*	"	M. F.30	....	227.	202.	25.	22.	22.	0.0	G.	5.	9.1	7.3	1.8	.256	.224	.192	.032	.6	.536	.064	.03	2.2	14.3	9.	3.	—	20,000
7316	" 18	" 19	*	"	M. F.15	...	229.2	189.6	39.6	34.	32.8	1.2	G.	5.3	8.1	6.9	1.2	.24	.224	.176	.018	.504	.44	.064	.035	2.2	12.9	11.	11.	?	7,000
7406	" 25	" 26	+	"	M. F.	....	220.1	202.8	17.6	30.	24.	6.	B.	6.9	9.8	8.1	1.7	.048	.4	.256	.144	1.24	.664	.576	.036	1.68	12.	11.5	18.	—	3,500
7416	May 2	May 3	+	"	M. F.10	.....	231.4	216.4	18.	35.6	33.6	2.	B.	9.	10.3	8.4	1.9	.08	.56	.272	.288	1.16	.74	.42	.052	.88	11.2	20.	23.	+	3,000
7490	" 9	" 10	*	"	M. F.03	.....	302.8	250.8	52.	22.8	20.	2.8	B.	9.8	10.8	8.2	2.6	.16	.418	.288	.16	.9	.612	.288	.06	.8	10.3	17.	17.	+	57,500
7548	" 16	" 17		......	M. F.1	.....	327.2	264.	63.2	36.	31.8	1.2	B.	13.2	12.4	8.5	3.9	.384	.416	.32	.096	1.284	.132	1.152	.075	.76	9.1	24.	26.	+	8,000
7591	" 23	" 24	*	Little	M. F.05	...	382.8	294.	88.8	57.6	35.6	22.	B.	13.5	12.2	7.7	4.5	.418	.352	.24	.112	.9	.74	.16	.115	.12	9.	24.	27.	+	40,500
7626	" 30	" 31	*	Cons'd	M. F.10	.....	328.1	267.6	60.8	24.8	19.6	5.2	B.	16.	11.1	8.5	2.6	.432	.368	.272	.096	1.16	.644	.516	.075	1.2	8.4	27.	32.	+	43,900
7711	June .	June 14	*	"	M. F.03	.....	342.	265.2	76.8	66.8	36.8	30.	B.	11.	9.7	6.4	3.3	.272	.32	.272	.048	1.22	.772	.448	.210	1.84	8.1	25.	33.	+	15,000
7847	July 5	July 6	*	Much	T. F.	Cla'y	285.6	252.1	33.2	29.2	21.4	4.8	B.	18.	7.	6.8	.2	.408	.224	.208	.016	.612	.388	.224	.16	1.52	7.	30.	......	—	60,000
7909	" 11	" 12	§	Little	T. F.02	.....	276.4	248.	28.4	32.	30.8	1.2	B.	12.	6.5	6.2	.3	.288	.176	.16	.016	.516	.324	.192	.095	1.12	6.3	28.	......	?	2,000
7958	" 18	" 19	*	"	T. F.02	......	301.6	244.4	57.2	31.6	27.6	4	B.	22.	7.5	5.9	1.6	.448	.21	.114	.096	.804	.58	.224	.12	1.24	6.3	26.	......	?	10,000
8021	" 25	" 26	*	"	T. F.01	.....	310.	233.2	76.8	27.6	27.6	0.0	B.	25.	6.5	6.2	.3	.33	.272	.24	.032	.836	.356	.48	.08	1.4	5.6	27.	......	?	24,500
8081	Aug. 1	Aug. 2	*	"	T. F.01	......	273.2	232.	41.2	25.6	23.6	2.	G.	24.	6.5	5.1	1.4	.21	.248	.204	.011	.546	.356	.19	.13	1.28	6.1	28.	......	+	47,000
8142	" 9	" 10	*	"	T. F.01	......	269.2	219.2	50.	43.2	42.8	.4	G.	17.	7.2	4.3	2.9	.144	.301	.224	.08	.836	.156	.38	.08	.68	....	....	......	....	....
8203	" 16	" 18	*	"	T. F.02	Gas'y	316.2	200.4	115.8	24.8	22	2.8	B.	18.	7.8	4.4	3.4	.416	.301	.192	.212	.836	.38	.456	.1	.76	7.	26.	......	+	27,500
8258	" 22	" 23	*	"	M. F.02	.....	221.2	203.6	17.6	15.2	13.2	2.	G.	20.	6.6	4.7	1.9	.352	.288	.16	.128	.508	.316	.192	.15	1.01	7.7	29.	......	?	5,500
8313	" 29	" 30	*	"	M. F.01	......	273.6	228.	45.6	30.	19.2	10.8	B.	21.	6.5	4.4	2.1	.418	.368	.176	.192	.668	.3	.338	.16	1.08	7.3	28.	......	?	5,450
8392	Sept. 6	Sept. 7	+	"	M. F.01	.....	290.4	249.6	40.8	21.2	19.2	2.	B.	20.	6.6	4.4	2.2	.176	.32	.192	.128	.536	.384	.152	.13	1.08	6.9	27.	......	‡	35,500
8451	" 12	" 13	+	"	M. F.03	......	252.	234.4	17.6	26.8	21	2.8	B.	16.	6.6	4.5	2.1	.512	.4	.16	.21	.76	.4	.36	.11	1.	6.6	25.	......	?	4,150
8510	" 20	" 21	*	Consid	M. F.1	......	291.4	253.2	11.2	29.6	25.6	4.	B.	21.	8.1	5.6	2.5	.391	.4	.192	.208	.76	.384	.376	.19	1.	5.2	20.	......	+	141,000
8543	" 26	" 27	*	"	M. F.2	......	322	266.8	55.2	31.2	21.	7.2	B.	23.	7.6	5.8	1.8	.584	.352	.176	.176	1.084	.....	.....	.12	1.08	4.8	23.	......	+	19,000
8613	Oct. 4	Oct. 4	*	"	M. F.02	.....	308.4	251.4	51.	30.	27.6	2.4	Bh.	18.	6.2	4.9	1.3	.528	.301	.272	.032	.88	.592	.088	.12	1.2	....	....	......	?	15,300

TURBIDITY. * Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 57.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—SANGAMON RIVER, CHANDLERVILLE.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Susp'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen: By Dissolved.	Oxygen: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Susp'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6612	Jan. 3	Jan. 4	+	Little	M. F.05	......	344.4	334.8	9.6	31.2	30.8	.4	G.	6.4	6.4	5.8	.6	.14	.128	.12	.008	.488	.424	.064	.016	2.6	3.	0.	3.5	—	9,400
6662	" 10	" 11	+	"	F.02	......	324.4	308.	16.4	40.4	38.8	1.6	B.	8.	3.3	3.3	0.0	.212	.112	.096	.016	.32	.288	.032	.012	1.88	3.6	1.	2.	—	11,100
6707	" 17	" 18	+	Cons'd	M. F.02	......	307.6	282.8	24.8	43.2	42.	1.2	B.	5.6	5.6	4.	1.6	.2	.208	.112	.096	.64	.224	.416	.013	1.2	3.6	4.	7.	—	11,950
6754	" 24	" 25	*	"	M. F.03	......	352.4	290.8	61.6	35.6	33.6	2.	B.	5.8	6.6	3.4	3.2	.24	.208	.144	.064	.64	.256	.384	.018	2.2	4.	5.	15.5	+	18,800
6800	" 31	Feb. 1	+	Little	F.01	......	320.	313.2	6.8	34.8	33.2	1.6	G.	5.8	3.6	3.5	.1	.128	.128	.12	.008	.48	.32	.16	.018	1.4	4.	0.	15.	—	1,850
6863	Feb. 7	" 8	*	Cons'd	M. F.03	......	318.	272.	76.	19.2	19.2	0.0	B.	6.4	7.6	4.8	2.8	.148	.224	.112	.112	.64	.32	.32	.015	1.36	5.	2.	13.	—	50,800
6914	" 14	" 15	*	Much	M. F.30	......	897.2	164.8	732.4	72.	11.2	60.8	B.	3.	29.8	6.3	23.5	.18	1.36	.176	1.184	2.64	.48	2.16	.015	1.52	7.	0.	4.	—	128,000
6997	Mar. 1	Mar. 3	*	Cons'd	M. F.02	......	384.8	229.6	155.2	45.2	39.2	6.	B.	4.5	13.1	8.1	5.	.224	.432	.16	.272	.88	.544	.336	.016	2.92	6.	0.	1.	+	125,500
7033	" 7	" 8	*	Much	M. F.02	......	408.8	207.6	201.2	29.6	24.4	5.2	B.	4.4	11.8	4.7	7.1	.192	.448	.144	.304	.88	.48	.4	.016	2.6	7.	1.	8.	+	123,000
7084	" 14	" 15	*	"	M. F.50	......	298.8	123.6	175.2	32.	12.	20.	B.	2.4	15.9	6.6	9.3	.14	.512	.208	.304	1.28	.416	.864	.012	1.48	16.	5.	4.	+	135,000
7136	" 21	" 22	*	"	M. F.20	......	490.8	179.6	311.2	35.2	8.	27.2	B.	3.2	17.7	5.6	12.1	.124	.608	.208	.4	1.68	.536	1.144	.02	2.72	12.	5.	4.	+	136,500
7184	" 28	" 29	*	Cons'd	M. F.02	......	324.	244.8	79.2	19.2	18.4	.8	B.	4.4	7.6	3.6	4.	.08	.24	.112	.128	.456	.28	.176	.014	3.4	8.	5.	6.	+	29,000
7242	April 4	April 5	*	"	M. F.02	......	346.4	272.8	73.6	29.2	26.8	2.4	B.	5.	6.2	3.9	2.3	.08	.192	.096	.096	.376	.248	.128	.02	3.4	8.	9.	11.	—	26,000
7293	" 11	" 12	*	"	M. F.01	......	323.6	271.2	52.4	20.	20.	0.0	G.	5.3	14.8	3.2	11.6	.016	.256	.128	.128	.472	.312	.16	.022	3.2	6.	9.	3.5	+	14,000
7348	" 18	" 19	*	"	M. F.03	......	311.6	276.	35.6	37.2	34.8	2.4	B.	5.4	5.	3.2	1.8	.048	.144	.112	.032	.408	.376	.032	.016	2.28	4.	16.	19.	?	7,500
7424	" 25	" 26	*	"	M. F.02	......	357.2	277.6	79.6	34.8	28.4	6.4	B.	5.8	6.6	3.8	2.8	.064	.224	.08	.144	.536	.28	.256	.018	1.52	4.	15.	25.	+	7,000
7458	May 2	May 3	*	"	M. F.03	......	332.4	260.	72.4	36.	26.	10.	B.	6.1	5.8	4.2	1.6	.024	.224	.128	.096	.484	.292	.192	.02	1.72	3.	18.	22.	+	4,300
7501	" 10	" 10	*	"	M. F.01	......	426.	259.	167.	34.8	33.6	1.2	B.	6.1	11.	4.2	6.8	.052	.416	.144	.272	1.3	.26	1.01	.015	1.64	3.	19.	22.	+	26,750
7562	" 16	" 17	*	"	M. F.04	......	370.1	295.6	74.8	39.6	38.	1.6	G.	5.9	7.9	4.8	3.1	.08	.32	.128	.192	.804	.356	.448	.025	1.	2.	25.5	31.	....	3,850
7602	" 23	" 24	§	V.M'ch	M. F.01	......	449.6	252.	197.6	46.4	28.8	17.6	B.	5.4	12.5	7.3	5.2	.076	.32	.16	.16	.836	.36	.176	.04	2.	3.	19.	22.	—	12,600
7637	" 30	" 31	*	Cons'd	M. F.03	......	522.	285.6	236.4	68.	38.4	29.6	B.	5.	13.2	4.4	8.8	.04	.32	.128	.192	.9	.308	.592	.032	2.2	3.	25.5	27.	+	11,700
7675	June 6	June 7	*	Much	M. F.02	......	445.2	248.4	196.8	42.	35.6	6.4	B.	5.4	13.3	4.6	8.7	.02	.336	.096	.24	.868	.34	.528	.01	2.08	4.	25.5	30.	+	13,000
7720	" 13	" 14	*	Cons'd	M. F.04	......	420.4	236.	184.4	41.6	26.4	15.2	B.	3.8	11.4	5.1	6.3	.032	.4	.176	.224	1.	.452	.548	.033	3.2	5.	25.5	30.	+	7,050
7760	" 20	" 21	§	V.M'ch	M. F.03	......	416.	312.4	103.6	84.	52.8	31.2	B.	4.9	9.	4.8	4.2	.024	.256	.16	.096	.52	.308	.212	.025	2.	3.	27.	24.	....	5,200
7800	" 27	" 28	*	Cons'd	M. F.05	M'sty	480.4	278.8	201.6	71.2	39.6	31.6	B.	5.8	11.7	5.4	6.3	.054	.304	.176	.128	1.032	.368	.664	.03	1.92	3.	28.	30.	+	93,000
7834	July 4	July 5	*	Much	T. F.03	"	391.2	191.2	200.	37.2	31.2	6.	B.	3.	13.6	6.6	7.	.060	.324	.176	.148	1.156	.532	.624	.07	1.2	5.	28.	......	....	3,500
7982	" 18	" 19	+	Cons'd	M. F.02	......	446.8	254.8	192.	35.2	21.6	13.6	B.	6.	10.5	5.5	5.	.076	.272	.176	.096	.708	.324	.384	.032	1.08	4.	25.5	......	?	5,500
8135	Aug. 8	Aug. 9	*	V Little	T. F.01	......	382.	277.6	104.4	49.2	40.8	8.4	B.	5.	6.3	4.7	1.6	.068	.208	.144	.064	.516	.308	.208	.008	1.04	2.	30.	......	+	3,000
8265	" 22	" 23	*	Little	M. F.04	Sl.Gs.	383.2	194.8	188.4	34.8	22.	12.8	B.	4.5	10.6	4.4	6.2	.120	.416	.224	.192	.796	.54	.256	.018	.92	4.	30.	......	—	1,650
8340	" 30	Sept. 1	*	Much	M. F.04	......	414.4	214.8	199.6	37.6	30.4	7.2	B.	5.	10.3	5.1	5.2	.116	.352	.224	.128	.824	.316	.508	.025	.88	3.	21.	......	—	8,700
8389	Sept. 5	" 6	*	Cons'd	M. F.03	......	399.2	230.	169 2	36.4	12.8	23.6	B.	3.6	9.6	3.8	5.8	.152	.32	.16	.16	.504	.32	.184	.015	.92	3.	27.	......	—	4,000
8506	" 19	" 20	*	Little	M. F.01	......	329.2	280.	49.2	21.6	16.	5.6	B.	5.4	5.1	3.3	1.8	.128	.208	.192	.116	.....	.304	.....	.005	.68	2.	18.	......	—	3,300
8561	" 26	" 27	+	"	M.	......	354.	294.8	59.2	28.	21.2	6.8	B.	6.	4.8	3.6	1.2	.172	.272	.112	.16	.492	.4	.092	.001	.56	3.	24.	......	—	5,650
8612	Oct. 3	Oct. 4	*	Cons'd	M. F.05	......	374 8	214.8	160.	28.4	21.6	6.8	B.	5.4	13.1	6.1	7.	.106	.384	.24	.144	1.208	.48	.728	.002	.88	..	....	......	?	5,100

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 58.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER. BEARDSTOWN.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Dis-solved.	Sus-pended.	Loss on Ig'n. Tot'l	Dis-solv'd	Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	By Dis-solved.	By Suspd Matter.	Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Dis-solv'd	Sus-pnd'd	Organic Nitrogen. Total.	Dis-solved.	Sus-pended.	Nitrogen as Nitrites.	Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6627	Jan. 4	Jan. 5	+	Cons'd	M. F.04	......	386.	375.2	10.8	44.	35.6	8.4	B.	29.	11.	8.2	2.8	2.56	.48	.304	.176	1.	.808	.192	.04	2.6	7.	0.	—2.	—	21,500
6680	" 11	" 12	+	"	M. F.03	......	343.6	338.8	4.8	39.2	34.4	4.8	B.	20.	8.2	7.3	.9	1.28	.368	.288	.08	.96	.64	.32	.035	1.88	7.1	0.	—1.	+	690,000
6722	" 18	" 19	*	Much	M. F.03	......	558.	279.6	278.4	52.	42.	10.	B.	16.	13.6	7.3	6.3	1.12	.528	.208	.32	1.28	.576	.704	.036	2.6	8.	0.	1.	+	232,000
6764	" 25	" 26	*	"	M. F.03	......	498.	320.4	177.6	53.2	34.4	18.8	B.	25.	14.6	8.1	6.5	2.08	.528	.352	.176	1.28	.64	.64	.04	1.84	....	....	9.	....	....
6804	Feb. 1	Feb. 2	*	Cons'd	M. F.04	......	329.6	308.4	21.2	34.8	28.	6.8	G.	22.	10.4	8.	2.4	2.16	.368	.256	.112	.864	.512	.352	.027	1.84	7.8	0.	15.5	+	15,500
6871	" 8	" 9	*	Much	M. F.04	......	1250.8	216.8	1034.	49.2	17.6	31.6	B.	.....	17.9	6.8	11.1	1.2	.864	.272	.592	1.92	.512	1.408	.017	1.4	9.2	0.	—1	....	356,000
6920	" 15	" 16	§	V. "	M. F.03	......	733.6	241.2	522.4	47.6	18.8	28.8	B.	12.	18.4	4.9	13.5	.8	.64	.32	.32	2.08	.64	1.44	.019	1.34	10.4	0.	—15.5	+	760,000
6967	" 22	" 23	§	V. "	M. F.10	......	603.2	201.2	402.	31.2	23.6	7.6	B.	8.4	17.3	7.5	9.8	.704	.576	.304	.272	1.68	.64	1.04	.035	2.24	10.9	0.	0	+	350,000
6994	Mar. 1	Mar. 3	*	Cons'd	M. F.05	......	339.6	237.6	102.	43.6	29.6	14.	B.	11.	13.3	9.8	3.5	.864	.432	.336	.096	.8	.64	.16	.035	1.44	9.8	0.	—1.	+	216,000
7051	" 8	" 9	*	"	M. F.30	......	352.	229.2	122.8	31.6	16.4	15.2	B.	9.2	13.6	10.6	3.	.752	.448	.32	.128	1.12	.576	.544	.025	1.72	11.2	0.	—3.	+	61,500
7095	" 15	" 16	*	Much	M. F.60	......	410.4	160.8	249.6	43.6	21.6	22.	B.	4.3	15.5	7.5	8.	.32	.512	.256	.256	1.76	.576	1.184	.013	.64	16.8	0	—3.	+	250,000
7151	" 22	" 23	*	"	M. F.15	......	305.2	144.	161.2	22.4	14.	8.4	B.	5.7	14.	5.7	8.3	.48	.416	.208	.208	1.24	.536	.704	.012	1.16	17.4	0.	7.	+	113,000
7204	" 29	" 30	*	Cons'd	M. F.15	......	239.2	119.2	120.	26.4	18.	8.4	B.	4.3	11.2	6.8	4.4	.384	.256	.192	.064	.728	.408	.32	.012	.76	15.9	1.	1.	—	158,500
7253	Apr. 5	Apr. 6	*	Much	M. F.06	......	358.	148.	210.	26.8	14.4	12.4	B.	4.9	15.8	7.9	7.9	.4	.148	.176	.272	1.112	.472	.64	.013	1.64	14.7	1.	7.	+	18,500
7313	" 12	" 13	*	Cons'd	M. F.06	......	281.8	171.8	110.	30.8	29.2	1.6	B.	5.8	19.1	7.5	11.6	.4	.32	.24	.08	.92	.568	.352	.017	1.72	14.1	1.	0.	—	29,000
7373	" 19	" 20	*	"	M. F.15	......	290.8	199.6	91.2	36.	24.8	11.2	B.	6.	11.3	9.1	2.2	.32	.208	.96	.112	.856	.664	.192	.032	1.12	13.	8.	13.	+	19,000
7429	" 26	" 27	*	"	M. F.02	......	310.	229.6	80.4	24.	24.	0.0	B.	7.2	12.3	6.6	5.7	.128	.432	.208	.224	1.048	.536	512	.045	1.88	12.1	10.	17.	?	17,000
7467	May 3	May 4	*	"	M. F.07	......	362.	261.8	97.2	25.6	24.	1.6	B.	9.1	12.6	8.2	4.4	.176	.48	.24	.24	1.16	.48	.68	.05	1.4	11.1	11.	8.	+	9,500
7518	" 10	" 11	*	"	M. F.07	......	387.2	249.2	138.	34.4	32.8	1.6	B.	9.5	27.	8.	19.	.24	.48	.24	.24	1.06	.532	.528	.04	1.08	10.3	18.	8.	?	39,000
7563	" 16	" 17	*	"	M. F.06	......	375.6	274.	101.6	49.6	46.8	2.8	B.	12.	12.6	8.4	4.5	.192	.4	.208	.192	.996	.74	.256	.03	.72	9.6	25.5	20	+	6,300
7601	" 23	" 24	§	V.M'ch	VM. F.4	......	440.4	274.	166.4	18.8	14.	4.8	B.	12.2	12.2	8.8	3.4	.288	.368	.224	.144	.9	.48	.42	.075	.9	9.5	25.5	20.	—	2,600
7636	" 30	" 31	*	Cons'd	M. F.04	......	400.	287.2	112.8	56.8	52.	4.8	B.	13.	11.3	7.5	3.8	.272	.384	.288	.096	1.092	.68	.412	.07	.92	9.1	27.	21.	+	7,000
7684	June 7	June 8	*	"	M. F.03	......	400.	241.2	158.8	45.2	26.8	18.4	B.	14.5	9.5	7.5	2.	.224	.352	.224	.128	.708	.518	.16	.144	1.52	9.	27.	22.	+	15,500
7729	" 14	" 15	*	"	M. F.04	......	380.	240.8	139.2	24.4	22.4	2.	B.	11.	11.5	6.8	4.7	.16	.32	.288	.032	.802	.58	.222	.14	1.76	8.8	24.	18.	+	6,950
7765	" 21	" 22	*	Much	M. F.07	......	384.	286.8	97.2	40.4	36.4	4.	B.	15.	10.8	6.8	4.	.16	.32	.208	.112	.708	.5	.208	.145	1.12	8.3	24.	20.	....	4,500
7806	" 28	" 29	*	Cons'd	M. F.15	......	358.8	272.8	86.	65.6	50.4	15.2	B.	16.	10.8	6.7	4.1	.112	.336	.24	.096	.648	.58	.068	.04	1.64	7.9	21.5	27.	+	1,900
7846	July 5	July 6	*	Slight	T. F.	Sl. M.	326.	240.	86.	25.2	20.8	4.4	B.	11.	7.9	7.7	.2	.112	.272	.208	.064	.692	.436	.256	.13	1.64	8.1	21.	......	....	3,500
7916	" 12	" 13	*	Little	T. F.02	......	338.8	249.2	89.6	37.6	29.6	8.	B.	16.	7.2	6.5	.7	.096	.272	.24	.032	.616	58	.036	.12	1.28	7.7	25.5	......	—	1,000
7985	" 19	" 20	*	"	T. F.02	......	306.	233.2	72.8	32.	24.	8.	B.	16.	7.8	6.	1.8	.112	.24	.192	.018	.42	.308	.112	.12	1.32	7.4	27.	......	—	3,000
8034	" 26	" 27	*	"	T. F.01	.....	317.6	250.8	96.8	55.2	36.	19.2	B.	22.	7.	5.5	1.5	.056	.272	.144	.128	.676	.42	.256	.1	1.32	7.5	27.	....		6,600
8086	Aug. 2	Aug. 3	*	"	T. F.01	......	319.6	238.	81.6	50.	43.2	6.8	G.	22.	6.5	4.7	1.8	.08	.24	.192	.048	.708	.58	.128	.09	1.32	7.4	28.	......		4,050
8143	" 9	" 10	*	"	T. F.01	......	287.6	247.2	40.4	37.2	32.8	4.4	G.	22.	7.6	4.4	3.2	.08	.304	.176	.128	.516	.264	.252	.09	1.06	7.4	28.	......	+	32,400
8195	" 16	" 17	*	"	T. F.01	......	336.	195.2	140.8	52.	20.	32.	B.	18.5	7.5	4.7	2.8	.176	.368	.192	.176	.988	.332	.656	.09	1.24	7.8	24.	......	—	11,150
8273	" 23	" 24	*	"	M. F.04	M'sty	278.	208.	70.	27.2	20.	7.2	B.	18.	7.5	4.1	3.4	.112	.304	.112	.192	.636	.3	.336	.13	.96	8.4	28.	......	—	16,050
8339	" 30	" 31	*	"	M. F.04	Gas'y	308.4	230.8	77.6	30.	29.2	.8	B.	19.	7.7	4.7	.3	.128	.32	.288	.032	.626	.3	.326	.15	1.08	8.1	28.	......	—	8,500
8406	Sept. 6	Sept. 7	*	V.M'ch	M. F.02	......	433.2	226.8	206.4	31.6	20.4	11.2	B.	19.	9.1	4.3	4.8	.096	.32	.256	.064	.508	.384	.124	.1	1.2	8.2	27.	......	?	9,200
8462	" 13	" 4	*	Cons'd	M. F.04	......	315.2	235.2	80.	20.8	18.4	2.4	B.	18.	9.3	5.6	3.7	.224	.704	.144	.66	1.02	.352	.668	.12	1.04	7.7	22.	......	+	2,400
8509	" 20	" 21	*	"	M. F.1	......	402.8	247.6	155.2	28.4	20.	8.4	B.	18.	10.5	5.8	4.7	.280	.512	.208	.304	.984	.32	.664	.075	.8	7.2	20.	......	+	7,000
8566	" 27	" 28	*	"	M.	......	344.8	250.	94.8	35.2	28.8	6.4	......	19.	7.8	6.2	1.6	.32	.368	.224	.144	.892	.608	.284	.1	1.	6.8	14.5	......	+	3,600
8622	Oct. 4	Oct. 5	*	"	M. F.04	......	337.4	251.8	85.6	33.2	26.8	6.4	B.	22.	6.9	4.7	2.2	.624	.336	.256	.08	.688	.608	.08	.13	1.47	...	....	......	+	32,000

TURBIDITY—*Decided. §Very Decided. + Distinct. ‡ Very Slight. ¶ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rb., Reddish. W., White.

TABLE 59.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, KAMPSVILLE.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6609	Jan. 3	Jan. 4	†	Little	F.08	......	389.6	379.6	10.	45.6	42.	3.6	B.	31.7	8.1	8.	.1	2.24	.432	.304	.128	.84	.616	.224	.06	1.68	15.7	2.	—2.	—	1,700
6704	" 17	" 18	†	Cons'd	M. F.03	......	343.2	338.4	4.8	50.8	47.6	3.2	B.	17.	7.2	6.6	.6	1.28	.384	.272	.112	.8	.64	.16	.036	2.60	15.9	3.	6.	—	72,000
6757	" 25	" 26	*	"	M. F.2	......	382.4	218.	164.4	32.8	21.6	11.2	B.	10.	13.7	6.8	6.9	1.04	.448	.224	.224	1.12	.32	.8	.03	2.	16.6	4.	16.5	+	53,500
6794	" 31	Feb. 1	*	"	M. F.05	......	330.8	305.2	25.6	16.	13.2	13.2	B.	19.	8.6	8.3	.3	1.6	.368	.24	.128	.88	.576	.304	.027	1.8	16.2	0.	—13.	—	19,700
6862	Feb. 7	" 8	*	"	M. F.03	......	428.8	270.	158.8	28.8	28.8	....	B.	16.	12.2	7.3	4.9	1.6	.512	.272	.24	1.04	.544	.496	.018	1.84	16.4	....	......	+	260,000
6908	" 14	" 15	§	V. M'ch	VM. F.06	......	1240.8	193.6	1047.2	71.2	26.	45.2	B.	9.	17.8	7.0	10.8	.736	1.376	.208	1.168	3.2	.416	2.784	.023	1.72	17.5	1.	—4.	+	150,000
6964	" 21	" 23	*	Much	VM. F.	......	768.8	180.4	568.4	90.8	20.8	70.	R.	7.6	16.9	7.1	9.8	.672	.736	.336	.4	2.32	.608	1.712	.022	2.	18.5	1.	4.	+	198,000
7050	Mar. 7	Mar. 9	*	Cons'd	M. F.04	......	917.2	178.8	738.4	43.6	14.8	28.8	B.	6.4	17.3	6.4	10.9	.656	.608	.208	.4	1.84	.544	1.296	.015	1.64	18.6	1.	......	+	122,000
7093	" 14	" 16	§	V. M'ch	M. F.3	......	905.2	136.4	768.8	30.	13.6	13.4	B.	4.1	17.2	5.8	11.4	.32	.672	.192	.48	1.92	.32	1.6	.013	1.04	21.9	3.	2.	+	31,800
7126	" 21	" 22	‡	Much	M. F.1	......	534.8	165.2	369.6	34.8	20.	14.8	B.	4.6	16.	8.	8.	.368	.496	.208	.288	1.24	.6	.64	.013	1.20	24.4	1.5	—2.	+	9,200
7181	" 28	" 29	*	Cons'd	M. F.4	......	311.2	147.6	163.6	26.	15.6	10.4	B.	4.8	11.5	8.5	3.	.432	.304	.192	.112	.984	.504	.48	.012	1.4	23.9	6.	12.	—	90,500
7230	Apr. 4	Apr. 5	*	"	M. F.30	......	292.	144.4	147.6	24.	8.4	15.6	B.	4.2	11.	6.9	4.1	.336	.288	.176	.112	.664	.44	.224	.015	1.32	22.2	8.	6.	+	31,000
7291	" 11	" 12	*	"	M. F.30	......	331.2	166.8	164.4	20.	18.8	1.2	B.	5.3	11.6	7.7	3.9	.272	.32	.192	.128	.696	.568	.128	.035	1.64	21.8	9.	2.	+	11,500
7347	" 18	" 19	*	"	M. F.30	......	325.6	190.8	134.8	26.4	26.4	0.0	B.	5.5	11.8	6.8	5.	.208	.352	.256	.096	.92	.824	.096	.03	2.08	23.	11.	22.	+	15,500
7414	" 25	" 26	*	"	M. F.21	......	353.2	224.	129.2	39.2	20.4	18.8	B.	6.8	11.3	7.1	4.2	.144	.336	.208	.128	.824	.568	.256	.036	1.12	19.5	15.	19.	—	5,300
7452	May 2	May 3	*	"	M. F.03	......	402.8	251.6	151.2	35.6	26.4	9.2	B.	8.6	12.5	7.4	5.1	.096	.512	.224	.288	.138	.484	.896	.03	1.6	18.1	20.	......	+	4,100
7492	" 9	" 10	*	"	M. F.03	......	457.6	233.6	224.	26.	24.8	1.2	B.	9.	13.	7.7	5.3	.128	.48	.224	.256	.1	.484	.516	.025	1.	17.8	15.	.....	+	5,600
7575	" 16	" 18	..	....	....	......	...	.....	.....	....	....	....	.....	.....	....	....	....	....	.....	.....	....	....	.....	.....	....	.....	....	....	.....	....	....
7600	" 23	" 24	§	V. M'ch	M. F.05	......	515.6	268.8	246.8	48.4	44.8	3.6	B.	10.2	13.8	8.4	5.4	.256	.416	.224	.192	.964	.58	.384	.04	.8	17.2	19.5	30.	—	5,450
7631	" 30	" 31	§	"	M. F.05	......	444.	262.	182.	42.	36.8	5.2	B.	14.	12.5	6.8	5.7	.136	.368	.256	.112	1.092	.548	.544	.06	1.36	17.	27.	35.	+	5,000
7668	June 6	June 7	§	Cons'd	M. F.03	......	399.2	248.	151.2	49.6	47.6	2.	B.	14.	11.3	8.2	3.1	.096	.336	.208	.128	.772	.52	.252	.09	1.48	16.8	27.	......	+	1,150
7721	" 13	" 14	§	"	M. F.03	......	430.8	270.4	160.4	47.6	27.6	20.	B.	15.	9.4	6.4	3.	.048	.32	.224	.096	1.	.5	.5	.05	1.76	16.7	26.	......	+	4,050
7759	" 20	" 21	§	Much	M. F.05	......	377.6	262.8	114.8	44.	23.2	20.8	B.	13.	8.7	6.	2.7	.032	.256	.192	.064	.516	.402	.114	.06	1.48	16.6	25.	......	....	1,600
7799	" 27	" 28	§	V. Sl'ht	T. F 1	......	392.4	295.6	96.8	82.4	56.	26.4	B.	15.	8.7	6.3	2.4	.032	.304	.24	.064	.744	.564	.18	.08	1.24	16.4	29.	......	+	2,200
7832	July 4	July 5	§	Little	T. F.05	......	335.2	248.4	86.8	28.	27.2	.8	B.	16.5	8.9	6.3	2.6	.048	.208	.192	.016	.452	.388	.064	.035	1.36	16.5	29.	......	....	1,850
7910	" 11	" 12	§	"	T. F.03	......	266.	222.	44.	22.4	17.2	5.2	B.	15.	6.	6.	0.0	.096	.176	.16	.016	.452	.372	.08	.06	1.52	....	....	......	....	....
7961	" 18	" 19	§	"	T. F.01	......	281.2	233.2	48.	35.2	18.	17.2	B.	15.	7.1	4.6	2.5	.048	.192	.176	.016	.5	.308	.192	.04	1.08	16.2	27.	......	+	2,200
8025	" 25	" 26	§	Cons'd	T. F.01	......	280.8	240.4	40.4	41.2	27.2	14.	B.	20.	6.3	5.2	1.1	.152	.272	.176	.096	.616	.244	.372	.07	1.52	16.1	27.	......	—	1,500
8084	Aug. 1	Aug. 3	§	Little	T. F.02	......	253.6	240.	13.6	28.	24.	4.	G.	20.	5.1	4.6	.5	.112	.224	.208	.016	.74	.58	.16	.04	1.28	16.1	29.	......	+	1,700
8141	" 7	" 10	§	"	T. F.01	......	282.8	238.	44.8	40.8	25.6	15.2	G.	20.	5.1	5.	.1	.144	.24	.224	.016	.728	.36	.368	.045	.92	16.1	30.	......	—	16,650
8193	" 15	" 17	§	"	T. F 01	......	276.	231.2	44.8	35.2	36.4	....	B.	19.	6.9	4.9	2.	.112	.32	.176	.144	.676	.316	.36	.04	.96	15.9	29.	......	?	620,000
8272	" 22	" 24	§	"	M. F.2	......	348.	61.2	286.8	30.4	16.4	14.	B.	15.	8.8	4.7	4.1	.144	.352	.16	.192	.972	.268	.704	.01	.92	16.6	29.	......	—	24,150
8333	" 29	" 30	§	"	T. F.02	......	312.8	210.8	102.	29.6	24.	5.6	B.	17.	7.8	5.	2.8	.112	.32	.128	.192	.72	.38	.34	.04	1.08	16.4	27.	......	—	1,300
8387	Sept. 5	Sept. 6	..	....	F.02	......	326.8	221.2	105.6	22.	12.8	9.2	B.	15.	7.4	4.4	3.	.112	.288	.112	.176	.472	.4	.072	.05	1.04	16.6	28.	......	+	4,100
8456	" 12	" 13	§	Cons'd	M. F.03	......	297.2	218.4	48.8	23.6	16.8	6.8	B.	18.	7.7	5.8	1.9	.112	.288	.24	.048	.7	.4	.3	.035	1.	16.3	23.	......	+	1,050
8507	" 19	" 20	§	"	M. F.1	......	294.4	232.4	62.	24.8	22.	2.8	B.	16.	7.7	5.4	2.3	.128	.32	.128	.192	.536	.416	.12	.04	1.	16.	17.	.....	+	15,250
8560	" 26	" 27	§	"	M.	......	302.	248.8	53.2	32.4	24.	8.4	B.	18.	6.3	5.9	.4	.16	.272	.256	.016	.6	.....	.....	.075	.88	15.8	25.	......	+	3,000
8614	Oct. 3	Oct. 4	§	"	M. F.04	......	314.8	250.8	64.	37.2	35.6	1.6	Bh.	18.	7.5	5.9	.6	.128	.304	.256	.048	.8	.544	256	.06	1.28	....	....	......	—	2,100

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 60.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER, T. J. BURRILL, University of Illinois.

SOURCE OF WATER—ILLINOIS RIVER, GRAFTON. (Regulars and Extras.)

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Turbidity.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine	Oxygen Consumed: Total.	By Dissolved.	By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6626	Jan. 4	Jan. 5	*	Cons'd	M. F.04	......	395.2	382.	13.2	40.4	38.8	1.6	B.	30.	11.8	8.3	3.5	2.24	.416	.288	.128	.92	.552	.368	.07	1.76	2.9	0.	.....	–	87.200
6655	" 10	" 11	+	Little	M. F.03	......	368.	365.2	2.8	28.4	28.	.4	G.	27.	7.5	7.4	.1	2.16	.432	.304	.128	.792	.6	.192	.03	2.28	4.2	0.	....	–	20.600
6705	" 17	" 18	+	Cons'd	M. F.03	......	338.1	329.6	8.8	47.6	44.4	3.2	B.	16.	7.2	6.5	.7	.704	.32	.208	.112	.72	.544	.176	.03	2.1	3.5	3.	......	--	11.300
6751	" 24	" 25	*	Much	M. F.02	......	502.4	216.	286.4	40.	22.4	17.6	B.	10.	16.	8.1	7.9	.8	.512	.208	.304	1.12	.704	.416	.03	2.	5.1	4.	......	+	59.000
6783	" 28	" 31	*	Cons'd	M. F.03	......	438.8	304.4	134.4	34.	29.2	4.8	B.	19.	11.5	8.5	3.	1.6	.416	.256	.16	.96	.64	.32	.01	2.2	4.9	0.	......	+	28.500
6785	" 29	" 31	*	"	M. F.02	......	435.6	315.6	120.	33.2	32.5	.8	G.	20.	11.1	8.1	3.	1.6	.368	.24	.128	.88	.576	.304	.035	2.4	4.5	0.	......	+	11.800
6793	" 30	Feb. 1	*	"	M. F.03	......	388.8	312.8	76.	30.4	28.1	2.	B.	19.5	9.3	8.7	.6	1.6	.352	.256	.096	.88	.544	.336	.028	2.1	3.7	0.	......	–	17.300
6802	" 31	" 2	*	"	M. F.02	......	439.2	311.2	128.	38.	29.2	8.8	G.	21.	10.	8.1	1.9	1.6	.352	.208	.144	.88	.576	.304	.032	2.2	2.8	0.	......		21.900
6803	Feb. 1	" 2	*	"	M. F.03	......	412.	314.8	97.2	30.4	26.	4.1	G.	19.	11.2	7.6	3.6	1.41	.384	.208	.176	.864	.448	.416	.025	2.4	2.	0.	......	–	5.200
6810	" 2	" 3	*	"	M. F.03	......	430.4	314.4	116.	40.	38.	2.	B.	19.	10.5	7.5	3.	1.44	.4	.268	.112	.768	.576	.192	.024	1.8	....	0.	......	+	72.000
6820	" 3	" 5	*	"	M. F.03	......	455.2	314.	141.2	34.	25.6	8.4	B.	19.5	12.3	7.7	4.6	1.36	.4	.24	.16	.8	.48	.32	.026	1.52	1.2	0.	......	....	113.100
6834	" 4	" 6	*	"	M. F.04	......	391.2	303.2	88.	30.	30.	0.0	G.	19.	8.6	7.2	1.4	1.44	.416	.256	.16	.88	.576	.304	.015	1.6	1.5	0.	......	....	189.000
6838	" 5	" 6	*	"	M. F.03	......	382.8	304.1	78.1	24.8	23.6	1.2	B.	19.	7.8	5.9	1.9	1.504	.384	.24	.144	.72	.544	.176	.02	1.48	....	....	......	....	....
6855	" 6	" 7	*	"	M. F.04	......	466.8	388.8	78	46.4	38.4	8.	G.	18.5	9.6	6.6	3.	1.52	.416	.208	.208	.88	.512	.368	.021	1.12	2.8	0.	......	–	100.800
6861	" 7	" 8	*	"	M. F.03	......	326.8	271.2	55.6	18.1	12.1	6.	B.	17.	10.9	7.7	3.2	1.36	.384	.176	.208	.8	.576	.224	.018	1.6	3.8	0.	......	+	258.000
6872	" 8	" 9	*	Much	M. F.03	......	832.8	281.8	548.	13.6	35.2	8.1	B.	15.	17.1	6.4	10.7	1.28	.752	.24	.512	1.84	.416	1.424	.015	1.88	5.4	0.	......	+	206.000
6880	" 9	" 10	§	"	M. F.03	......	595.6	221.6	374.0	31.6	18.0	13.6	B.	13.	13.9	6.3	7.6	.96	.592	.208	.384	1.28	.448	.832	.015	1.32	7.8	0.	......	+	212.000
6882	" 10	" 11	*	V. M'ch	VM. F.15	......	998	292.4	705.6	64	27.6	36.4	B.	9.	17.5	6.6	10.9	.72	.768	.256	.512	1.84	.512	1.328	.017	1.18	7.1	0.	......	+	89.000
6885	" 11	" 13	§	Much	VM F.15	......	1361.	241.	1120.	65.2	18.	17.2	B.	9.	21.	7.9	16.1	.576	1.216	.24	.976	2.88	.768	2.112	.022	1.18	6.7	0.	......	+	131.250
6890	" 12	" 13	§	V. M'ch	VM. F.3	......	1175.6	180.4	995.2	69.2	21.6	47.6	B.	8.5	21.7	8.7	13.	.608	1.152	.384	.768	2.56	.832	1.728	.019	1.52	6.7	0.	....	+	160.000
6900	" 13	" 14	§	"	VM. F.4	......	1671.6	167.2	1504.1	56.8	23.2	33.6	B.	5.1	21.9	6.9	18.	.512	1.6	.288	1.312	3.84	.544	3.296	.018	1.48	....	0.	....	+	160.000
6913	" 14	" 15	§	"	VM. F.6	......	1481.6	170.4	1311.2	72.4	45.6	26.8	B.	5.1	21.7	7.9	16.8	.544	1.376	.288	1.088	3.52	.544	2.976	.013	1.44	6.6	0.	......	–	240.000
6921	" 15	" 16	§	Much	M. F.03	......	1022.8	192.	830.8	51.4	17.2	37.2	B.	9.	21.8	5.5	16.3	.8	.96	.256	.704	2.4	.544	1.856	.013	1.76	6.8	0.	......		113.000
6925	" 16	" 18	§	V. M'ch	VM. F.03	..	1400.	212.8	1187.2	66.8	11.2	55.6	B.	11.	31.8	4.	27.8	.8	1.12	.224	.896	2.48	.704	1.776	.025	1.76	6.9	0.	......		396.000
6926	" 17	" 18	§	"	VM. F.04	......	912.	247.2	664.8	54.	50.8	3.2	B.	12.	18.8	4.6	11.2	.896	.864	.224	.64	1.76	.576	1.184	.024	1.8	6.5	0.	......	–	262.000
6927	" 18	" 20	*	Cons'd	M. F.04	......	566.	247.2	318.8	44.4	36.8	7.6	B.	10.	15.1	7.1	8.	.768	.64	.352	.288	1.28	.672	.608	.018	1.8	6.6	0.	......	–	330.000
6936	" 19	" 20	*	"	M. F.05	......	512.	204.8	307.2	42.	26.	16.	B.	9.5	14.1	6.7	7.4	.8	.64	.352	.288	1.11	.576	.864	.017	2.	6.8	0.	....	+	287.000
6943	" 20	" 21	*	"	M. F.05	......	454.4	144.4	310.	77.2	30.	17.2	RB.	10.	15.5	6.7	8.8	.8	.64	.224	.416	1.12	.544	.576	.015	2	6.9	0.	......	–	416.000
6956	" 21	" 23	*	Much	M. F.2	......	732.8	202.	530.8	83.6	29.2	54.4	B.	8.	16.9	8.3	8.6	.704	.864	.272	.592	1.28	.64	.64	.023	2.	8.3	0.	......	–	172.000
6955	" 22	" 23	*	"	VM. F.2	.....	1466.4	196.8	1269.6	101.6	24.8	76.8	B.	7.4	19.6	7.1	12.5	.688	1.12	.24	.88	1.92	.544	1.376	.027	2.	8.3	0.	......	+	108.000
6978	" 22	" 26	§	V. M'ch	VM. F.06	.....	1862.	172.	1690.	98.	36.	62.	G.	6.6	21.8	9.2	15.6	.544	1.408	.288	1.12	3.36	.672	2.688	.027	1.88	8.3	0.	.....	–	280.000
6982	" 25	" 27	*	Much	M. F.03	......	1264.4	162.	1102.4	107.6	24.8	82.8	B.	6.4	23.	11.7	11.3	.544	1.12	.352	.768	2.61	.448	2.192	.018	1.8	7.9	0.	......	+	195.000
6985	" 26	" 28	*	"	M. F.3	......	1047.2	252.	795.2	94.8	38.8	56.	B.	6.2	19.9	8.4	11.5	.512	.96	.256	.704	3.28	.64	2.64	.03	2.2	7.2	0.	....	–	270.000
6991	" 27	Mar. 1	*	"	M. F.1	......	758.8	193.2	565.6	45.6	16.	29.6	B.	6.4	19.3	10.6	8.7	.544	.768	.32	.448	1.92	.852	1.068	.018	1.92	6.6	0.	......	–	255.000
6992	" 28	" 2	*	"	M. F.3	......	729.2	218.8	510.4	100.	32.4	67.6	B.	7.	16.1	6.2	9.9	.528	.64	.272	.368	1.68	.64	1.04	.018	2.	6.4	0.	....	–	116.500
6998	Mar. 1	" 3	*	Cons'd	M. F.03	......	574.8	218.	356.8	42.8	25.2	17.6	B.	7.4	16.3	9.8	6.5	.576	.56	.176	.384	1.12	.544	.576	.017	1.88	6.	0.	......	+	262.000

TURBIDITY *Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 60—Continued.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, GRAFTON. (Regulars and Extras.)

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of		Appearance.			Odor.	Residue on Evaporation.						Color on Igni-tion.	Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centi-meter.
	1900 Collec-tion.	1900 Exami-nation.	Turb'y.	Sedi-ment.	Color.		Total.	Dis-solved.	Sus-pended.	Loss on Ign.					Total.	By Dis-solved.	By Suspd Matter.	Free Am-monia.	Albuminoid Am.			Total.	Dis-solved.	Sus-pended.	Nitrites.	Nitrates.					
										Tot'l	Dis-solv'd	Sus-pnd'd							Tot'l	Dis-solv'd	Sus-pnd'd										
7005	Mar. 2	Mar. 3	*	Cons'd	M. F.03	......	654.8	335.6	319.2	66.4	24.4	42.	B.	8.4	14.9	8.4	6.5	.56	.48	.272	.208	1.12	.704	.416	.019	1.76	5.6	0.	......	+	160,000
7013	" 3	" 5	*	"	M. F.07	......	524.8	226.8	298.	26.4	21.	2.4	B.	8.2	13.7	7.1	6.6	.528	.48	.304	.176	1.12	.576	.544	.03	2.12	4.9	0.	......	+	232,000
7017	" 4	" 6	*	Much	M. F.08	......	500.	223.6	276.4	31.	24.8	9.2	B.	8.4	13.3	8.3	5.	.56	.448	.224	.224	1.04	.64	.4	.021	2.4	4.5	0.	......	+	173,000
7019	" 5	" 6	*	"	M. F.04	......	714.	220.4	493.6	25.6	17.6	8.	B.	7.8	15.6	8.9	6.7	.56	.592	.304	.288	1.2	.672	.528	.022	2.08	5.2	0.	......	—	177,000
7030	" 6	" 7	*	V.M'ch	VM.F.1	......	2241.2	165.2	2076.	47.6	20.4	27.2	B.	6.2	25.4	6.6	18.8	.592	1.184	.208	.976	3.36	.416	2.944	.014	1.48	7.2	0.	......	....	237,000
7035	" 7	" 8	*	Much	M. F.05	......	973.2	178.	795.2	56.8	18.8	38.	B.	6.6	17.6	6.4	11.2	.528	.736	.264	.472	1.92	.544	1.376	.012	1.44	9.3	0.	......	+	233,000
7036	" 8	" 9	*	"	M. F.3	......	1131.2	450.4	980.8	39.6	17.2	22.4	B.	4.2	23.4	7.6	15.8	.448	.96	.16	.8	2.4	.416	1.984	.017	1.04	10.4	0.	......	+	159,000
7059	" 9	" 10	§	V.M'ch	VM.F.15	......	1316.	128.	1188.	57.6	11.2	46.4	B.	3.8	22.5	5.4	17.1	.32	.896	.128	.768	2.56	.352	2.208	.007	1.08	10.6	0.	......	+	331,000
7060	" 10	" 12	§	"	VM.F.15	......	1139.6	120.4	1019.2	41.6	11.6	30.	B.	3.8	23.4	6.	17.4	.304	.832	.176	.656	2.4	.48	1.92	.011	1.2	11.6	0.	......	+	244,000
7062	" 12	" 13	§	"	M. F.1	......	1088.	138.8	949.2	32.4	15.6	16.8	B.	4.4	20.6	6.5	14.1	.384	.8	.224	.576	1.84	.512	1.328	.014	1.28	12.5	2.	......	+	225,000
7070	" 12	" 13	*	Much	M. F.4	......	1175.6	137.2	1038.4	55.2	4.4	50.8	B.	4.	22.7	6.3	16.4	.32	.896	.272	.624	1.84	.512	1.328	.011	1.2	13.2	2.	......	+	260,000
7079	" 13	" 14	*	"	M. F.4	......	1292.	157.6	1134.4	47.6	30.	17.6	B.	4.4	23.	7.6	15.4	.368	.96	.224	.736	2.4	.544	1.856	.009	1.4	15.	3.	......	+	260,000
7082	" 14	" 15	*	"	M. F.2	......	799.2	153.2	646.	45.2	21.6	23.6	B.	4.2	16.2	6.2	10.	.32	.608	.208	.4	1.6	.384	1.216	.011	1.4	16.3	4.	......	+	237,500
7096	" 15	" 17	*	"	M. F.02	......	816.8	148.4	668.4	33.2	10.8	22.4	B.	4.	18.7	5.3	13.4	.304	.64	.192	.448	1.92	.448	1.472	.012	1.32	16.9	3.	......	+	208,000
7103	" 16	" 17	*	"	M. F.2	......	776.	132.	644.	44.	20.	24.	B.	4.4	17.2	5.1	12.1	.272	.736	.192	.544	2.	.448	1.552	.008	1.12	17.1	2.	......	+	176,000
7106	" 17	" 19	*	"	M. F.05	......	737.6	116.8	620.8	25.6	14.8	10.8	B.	4.2	18.9	5.1	13.8	.288	.736	.144	.592	1.92	.504	1.416	.008	1.28	17.1	0.	......	—	87,500
7108	" 18	" 20	*	"	M. F.3	......	677.6	120.4	557.2	34.8	12.8	22.	Rh.	3.8	16.3	6.8	9.5	.256	.672	.224	.448	1.56	.472	1.088	.013	1.48	16.5	0.	......	+	185,000
7116	" 19	" 20	*	"	M. F.6	......	844.4	131.2	713.2	33.2	15.6	17.6	B.	4.	17.6	7.	10.6	.24	.704	.208	.496	1.56	.472	1.088	.008	1.42	15.6	0.	......	+	90,000
7125	" 20	" 21	*	"	M. F.06	......	1060.	125.6	934.4	54.	19.2	14.8	B.	4.2	21.6	6.3	15.3	.32	.768	.208	.56	2.12	.536	1.584	.009	1.32	15.2	0.	......	+	107,000
7130	" 21	" 22	*	"	M. F.15	......	807.6	133.6	674.0	40.8	18.4	22.4	B.	4.8	17.9	6.	11.9	.288	.864	.176	.688	1.88	.6	1.28	.011	1.32	14.8	3.	......	+	119,000
7150	" 22	" 23	*	"	M. F.04	......	674.	132.	542.	28.8	14.	14.8	B.	4.	16.1	5.6	10.5	.224	.512	.192	.32	1.88	.472	1.408	.013	1.4	14.8	3.	......	—	148,000
7153	" 23	" 24	*	"	M. F.3	......	654.4	148.	506.4	34.8	12.8	22.	B.	4.8	16.6	6.	10.6	.288	.528	.208	.32	1.56	.536	1.024	.013	1.44	14.6	3.	......	—	175,500
7155	" 24	" 26	*	"	M. F.6	......	668.4	166.8	501.6	38.8	14.	24.8	B.	4.2	15.1	7.8	7.3	.288	.512	.208	.304	1.56	.6	.96	.012	1.6	14.2	4.	......	+	107,000
7162	" 25	" 27	*	"	M. F.3	......	715.2	155.6	559.6	45.6	17.6	28.	B.	4.6	15.9	7.5	8.4	.304	.512	.192	.32	1.172	.536	.636	.011	1.6	13.2	4.	......	+	76,000
7171	" 26	" 28	*	"	M. F.4	......	555.2	152.8	402.4	28.8	14.8	14.	B.	4.4	15.	8.	7.	.32	.448	.192	.256	1.32	.44	.88	.012	1.56	....	....	......	....	....
7173	" 27	" 28	*	"	M. F.03	......	560.8	143.2	417.6	32.8	16.4	16.4	B.	4.4	13.3	6.1	7.2	.288	.448	.24	.208	1.08	.472	.608	.009	1.52	13.	4.	......	–	78,000
7185	" 28	" 29	*	Cons'd	M. F.01	......	544.4	149.2	395.2	34.	13.2	20.8	B.	4.4	14.	6.	8.	.256	.416	.176	.21	1.112	.408	.704	.01	1.52	12.7	3.	......	‡	48,500
7203	" 29	" 30	*	"	M. F.04	......	501.	144.	360.	22.4	12.	10.4	B.	4.2	13.7	6.7	7.	.24	.384	.192	.192	.92	.504	.416	.011	1.08	12.4	3.	......	+	47,500
7206	" 30	April 2	*	"	M. F.05	......	463.6	141.2	322.4	36.4	16.	20.4	B.	4.2	14.1	6.9	7.2	.288	.352	.176	.176	.952	.44	.512	.015	1.56	12.1	2.	......	—	94,000
7208	" 31	" 2	*	"	M. F.05	......	466.8	142.4	324.4	29.6	12.4	17.2	B.	4.2	13.7	5.7	8.	.272	.352	.224	.128	1.08	.472	.608	.013	1.52	11.7	3.	......	—	61,500
7211	April 1	" 3	*	"	M. F.06	......	426.	144.	282.	23.2	10.4	12.8	B.	4.1	13.8	7.1	6.7	.272	.336	.208	.128	.856	.44	.416	.013	1.48	11.3	4.	......	—	74,000
7213	" 2	" 3	*	"	M. F.04	......	388.8	141.2	247.6	22.8	12.4	10.4	B.	4.6	13.1	6.	7.1	.224	.336	.192	.144	.792	.44	.352	.015	1.6	11.2	4.	......	—	32,000
7226	" 3	" 4	*	"	M. F.06	......	399.2	151.2	248.0	13.6	13.2	.4	B.	4.9	12.6	6.1	6.5	.224	.352	.144	.208	.760	.44	.320	.013	1.6	11.3	4.	......	+	30,000
7238	" 4	" 5	*	"	M. F.15	......	375.6	147.6	228.0	31.2	18.8	12.4	B.	4.1	13.3	6.0	7.3	.256	.320	.176	.144	.696	.472	.224	.017	1.6	11.8	4.	......	—	23,500
7254	" 5	" 6	*	"	M. F.04	......	369.2	153.2	216.0	26.4	16.0	10.4	B.	4.5	12.4	6.3	6.1	.224	.304	.160	.144	.856	.440	.416	.015	1.60	12.3	5.	......	+	13,000
7259	" 6	" 7	*	"	M. F.03	......	371.2	158.0	213.2	42.4	17.6	24.8	B.	4.7	11.8	6.2	5.6	.264	.304	.208	.096	.696	.156	.240	.017	1.48	13.	5.	......	....	23,500

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL.
University of Illinois.

SOURCE OF WATER—ILLINOIS RIVER, GRAFTON. (Regulars and Extras.)

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
7261	Apr. 7	Apr. 9	*	Cons'd	M. F.07	......	361.6	159.6	202.0	32.8	26.0	6.8	B.	4.3	12.0	6.4	5.6	.272	.320	.176	.144	.76	.504	.256	.027	1.60	13.4	8.	......	+	11.000
7263	" 8	" 10	*	"	M. F.05	......	375.2	171.2	204.0	26.8	16.0	10.8	B.	5.1	12.3	8.0	4.3	.256	.288	.224	.064	.76	.44	.32	.030	1.44	13.6	9.	......	−	26,000
7270	" 9	" 10	*	"	M. F.45	......	356.8	168.0	188.8	21.6	18.4	3.2	B.	4.7	11.6	7.4	4.2	.24	.256	.192	.064	.664	.472	.192	.022	1.32	13.7	10.	......	−	9,000
7282	" 10	" 11	*	"	M. F.30	......	364.0	171.2	192.8	12.0	10.0	2.0	B.	4.7	12.0	6.9	5.1	.224	.304	.208	.096	.824	.568	.256	.025	1.32	13.4	10.	......	—	16.500
7295	" 11	" 12	*	"	M. F.04	......	386.4	170.8	215.6	19.2	11.2	8.0	B.	5.0	11.8	6.2	5.6	.208	.384	.208	.176	.920	.504	.416	.030	1.68	13.1	9.	......	+	21.000
7311	" 12	" 13	*	"	M. F.07	......	353.6	173.2	180.4	19.6	14.8	4.8	B.	5.6	10.8	5.9	4.9	.192	.320	.192	.128	.84	.472	.368	.024	1.52	12.8	9.	......	—	13.500
7315	" 13	" 14	*	"	M. F.06	......	327.6	182.4	145.2	26.0	22.0	4.0	B.	5.5	10.9	6.4	4.5	.224	.352	.208	.144	.856	.536	.320	.027	1.60	12.5	9.	......	....	20,500
7316	" 14	" 16	*	"	M. F.10	......	331.6	181.0	147.6	38.0	37.2	.8	B.	5.4	8.7	6.5	2.2	.224	.352	.224	.128	.856	.536	.320	.030	1.64	12.1	9.	......	....	16.000
7323	" 15	" 17	*	"	M. F.20	......	328.8	200.0	128.8	29.6	27.6	2.0	B.	5.5	10.8	6.9	3.9	.207	.272	.176	.096	.632	.504	.128	.037	1.60	11.9	9.	......	—	16.500
7327	" 16	" 18	*	"	M. F.40	......	309.2	182.0	127.2	11.2	9.6	1.6	B.	7.	11.2	7.0	4.2	.176	.288	.224	.064	.856	.568	.288	.027	1.52	11.5	10.	......	−	16.000
7334	" 17	" 18	*	"	M. F.04	......	354.8	193.2	161.6	34.4	30.	4.4	B.	5.4	10.9	6.7	4.2	.144	.304	.176	.128	1.016	.440	.576	.035	1.72	11.2	10.	......	—	7.500
7349	" 18	" 20	*	"	M. F.25	......	338.0	182.0	156.0	26.8	23.	3.8	B.	5.6	11.9	6.6	5.3	.176	.288	.224	.064	.840	.568	.272	.027	1.80	10.9	11.	......	—	7,000
7380	" 19	" 21	*	"	M. F.05	......	344.8	182.0	162.8	24.4	21.2	3.2	B.	5.0	11.5	6.5	5.0	.128	.288	.160	.128	.856	.536	.320	.060	1.72	11.	11	......	−	3.300
7381	" 20	" 21	*	"	M. F.03	......	311.6	181.2	130.4	24.0	19.2	4.8	B.	5.2	11.2	6.6	4.6	.192	.304	.176	.128	.920	.472	.448	.065	1.76	....	11.	......	+	9.750
7382	" 20	" 21	*	"	M. F.15	......	321.6	133.2	188.4	21.2	21.2	....	B.	3.2	12.7	7.5	5.2	.080	.416	.192	.224	.824	.472	.352	.030	.56	....	....	......	....	....
7386	" 22	" 24	*	"	M. F.04	....	311.4	201.6	112.8	21.6	21.2	.4	B.	5.7	8.8	7.4	1.7	.176	.320	.192	.128	.984	.504	.480	.030	2.0	12.4	12.	......	....	8.300
7387	" 21	" 24	*	"	M. F.66	......	322.4	186.0	136.4	19.2	17.6	1.6	B.	5.6	11.5	6.3	5.2	.176	.352	.192	.160	.984	.600	.384	.034	2.08	12.3	11.	......	....	23.200
7396	" 23	" 25	*	"	M. F.08	......	318.8	200.0	118.8	20.8	17.6	3.2	B.	6.0	9.1	8.1	1.0	.96	.320	.176	.144	.76	.504	.256	.035	1.92	12.5	11.	......	−	7.000
7423	" 25	" 27	*	"	M. F.20	......	316.8	216.0	100.8	36.0	27.2	8.8	B.	6.2	10.5	6.7	3.8	.128	.272	.208	.064	.952	.504	.448	.036	1.12	12.7	15.	......	+	6.700
7450	May 2	May 3	*	"	M. F.03	......	313.2	156.4	156.8	34.0	22.0	12.0	B.	7.5	11.1	7.0	4.1	.096	.416	.24	.176	1.12	.484	.636	.026	1.32	10.7	20.	......	−	2.400
7500	" 9	" 11	*	"	M. F.03	......	368.0	229.6	138.4	24.8	22.4	2.4	B.	8.4	12.0	7.6	4.4	.144	.384	.256	.128	1.38	.548	.832	.030	.96	12.2	19.	......	+	17.600
7561	" 16	" 17	*	"	M. F.02	......	329.2	253.6	75.6	36.0	34.8	1.2	B.	10.	10.9	7.5	3.4	.072	.32	.208	.112	.804	.452	.352	.04	.76	8.5	25.	......	?	4,050
7603	" 23	" 25	§	V. M'ch	V.M. F.05	......	374.8	265.2	109.6	16.8	37.2	9.6	B.	10.5	11.4	9.4	2.0	.064	.32	.192	.128	.74	.360	.380	.038	.9	8.4	20.	......	—	4.100
7627	" 30	" 31	*	Cons'd	M. F.07	......	361.0	265.6	98.4	10.8	26.8	14.0	B.	14.	10.8	7.6	3.2	.032	.320	.208	.112	.84	.52	.32	.024	1.48	6.5	25.	......	+	6.100
7674	June 6	June 8	*	"	M. F.03	......	352.0	243.6	108.4	36.	35.6	.4	B.	12.	9.5	6.6	2.9	.032	.288	.160	.128	.80	.468	.332	.008	1.40	6.	25.	......	+	19.550
7722	" 13	" 15	*	"	M. F.04	......	360.8	258.8	102.0	37.6	37.2	.4	B.	14.	7.6	5.8	1.8	.048	.272	.176	.096	.90	.58	.32	.008	1.76	5.2	27.	......	+	4.400
7750	" 20	" 21	*	Little	M. F.05	......	308.8	270.8	38.0	35.6	35.2	.4	B.	13.	8.0	6.5	1.5	.032	.256	.192	.064	.12	.356	.064	.013	1.48	5.2	27.	......	—	1.050
7769	" 25	" 26	*	Much	M. F.03	......	360.8	267.6	93.2	31.2	28.4	2.8	B.	13.	8.1	6.7	1.4	.048	.272	.24	.032	.596	.580	.016	.007	1.04	....	....	......	....	....
7789	" 27	" 28		V Lit'le	T.	M'sty	371.6	236.4	135.2	39.2	34.4	4.8	B.	12.	11.5	6.2	5.1	.100	.272	.160	.112	.968	.546	.152	.070	1.28	5.7	27.	......	+	2.500
7808	" 29	" 30	*	Cons'd	T. F.15	......	341.6	317.2	24.4	41.8	38.0	6.8	G.	12.8	7.6	7.5	.1	.018	.304	.192	.112	.644	.516	.128	.014	.80	....	....	......	....	....
7813	July 2	July 3	*	Much	T. F.05	......	384.8	255.2	129.6	42.8	29.2	13.6	B.	11.	8.2	6.4	1.8	.010	.240	.176	.064	.561	.436	.128	.019	1.00	....	....	......	....	....
7835	" 4	" 5	*	"	T. F.03	M'sty	364.1	256.4	108.0	33.6	21.6	12.0	B.	15.	7.2	5.6	1.6	.070	.210	.144	.096	.518	.292	.256	.020	1.10	....	....	......	....	....
7848	" 6	" 7	*	"	T. F.02	......	343.2	253.2	90.0	35.6	31.2	4.4	B.	15.	7.7	6.9	.8	.070	.208	.176	.032	.612	.372	.240	.013	1.28	14.6	29.	......	−	560
7886	" 9	" 10	*	Little	T. F.03	......	314.1	246.1	68.	36.	25.6	10.4	B.	13.	7.8	5.9	1.9	.160	.272	.160	.112	.516	.292	.224	.018	1.72	4.1	30.	......	−	5.300
7899	" 11	" 12	*	"	T. F.30	......	289.2	241.2	48.0	58.0	26.8	31.2	B.	13.	7.6	6.2	1.4	.090	.320	.176	.144	.518	.356	.192	.026	1.36	4.	30.	......	?	1.600
7917	" 13	" 14	*	"	T. F.03	......	306.8	243.6	63.2	26.4	25.6	.8	B.	13.	6.7	6.6	.1	.096	.240	.160	.080	.568	.350	.218	.015	1.32	3.9	31.	......	+	3.300

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. ‖ Slight.

COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 60—Concluded.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, GRAFTON. (Regulars and Extras.)

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
7926	July 16	July 17	*	Little	T. F.02	......	289.6	233.2	56.4	47.2	19.2	28.	B.	13.	6.3	6.1	.2	.032	.176	.144	.032	.50	.272	.228	.014	1.00	3.9	31.	......	—	1,700
7966	" 18	" 19	*	"	T. F.02	......	288.4	218.0	70.4	26.4	19.2	7.2	B.	14.	6.9	5.1	1.8	.080	.208	.176	.032	.548	.324	.224	.024	1.28	4.3	27.	......	?	4,900
7986	" 20	" 21	*	"	T. F.02	......	347.6	210.4	137.2	31.2	29.2	2.0	B.	13.	8.9	6.5	2.4	.048	.272	.176	.096	.452	.276	.176	.035	.88	5.	27.	......	+	8,350
7995	" 23	" 24	*	"	T. F.02	......	264.4	199.6	64.8	24.0	21.2	2.8	B.	11.	7.0	4.8	2.2	.088	.224	.112	.112	.292	.116	.176	.014	1.04	6.3	28.	......	....	3,000
8031	" 25	" 26	*	"	T. F.02	......	298.8	210.8	88.	56.	44.8	11.2	B.	11.	8.6	7.0	1.6	.160	.272	.176	.096	.70	.484	.216	.036	1.08	6.2	28.	......	+	5,250
8035	" 27	" 28	*	"	T. F.02	......	342.4	228.8	113.6	56.	56.	....	B.	13.	11.9	7.7	4.2	.048	.352	.176	.176	.644	.372	.272	.018	.88	7.	29.	......	—	1,800
8049	" 30	....	*	Much	M.	......	347.6	195.2	152.4	52.	40.4	11.6	B.	14.	10.	7.	3.	.032	.320	.176	.144	.596	.420	.176	.020	1.12	7.3	29.	......	—	6,500
8067	Aug. 1	Aug. 2	*	Little	T. F.01	......	293.6	215.6	78.	36.8	32.	4.8	B.	17.	7.3	5.3	2.	.08	.224	.176	.018	.50	.292	.208	.014	1.16	7.	29.	......	—	1,200
8088	" 3	" 4	*	"	T. F.01	......	259.2	223.6	35.6	28.8	28.4	.4	B.	19.5	5.1	5.6	....	.080	.224	.176	.018	.481	.340	.144	.021	1.16	6.8	29.	......	+	1,850
8096	" 6	" 7	*	"	T. F.01	......	272.0	213.8	28.2	44.4	38.	6.4	G.	18.	6.7	5.1	1.6	.112	.256	.160	.096	.644	.452	.192	.014	.92	6.1	30.	......	—	500
8126	" 8	" 9	*	"	T. F.01	......	283.2	239.6	43.6	46.0	30.4	15.6	G.	20.	6.1	4.3	1.8	.144	.256	.224	.032	.616	.452	.164	.028	1.12	5.5	30.	......	—	4,000
8146	" 10	" 11	*	"	T. F.01	......	274.4	216.8	57.6	26.8	25.6	1.2	B.	20.	5.8	4.1	1.7	.048	.272	.224	.048	.516	.38	.136	.021	.92	5.	31.	......	—	1,850
8157	" 13	" 14	*	"	T. F.01	......	284.8	232.8	52.	10.8	31.8	6.	B.	22.	6.6	4.7	1.9	.080	.304	.176	.128	.740	.428	.312	.016	1.08	4.4	30.	......	+	5,275
8180	" 15	" 16	*	"	T. F.01	......	305.2	236.4	68.8	28.	19.6	8.4	B.	21.	6.7	4.8	1.9	.112	.320	.192	.128	.676	.332	.344	.023	.92	4.2	30.	......	+	3,700
8214	" 17	" 18	*	"	T. F.05	......	283.2	141.6	141.6	26.8	20.8	6.	B.	3.6	11.3	8.3	3.	.176	.352	.64	.....	.568	.332	.236	.002	.36	4.2	31.	......	+	2,750
8221	" 20	" 21	*	"	T. F.01	......	328.	198.8	129.2	28.4	18.4	10.	B.	17.	7.3	4.7	2.6	.08	.304	.224	.08	.6	.316	.284	.019	1.12	6.8	30.	......	+	2,700
8256	" 22	" 23	*	Much	T. F.	......	327.2	170.8	156.4	42.8	16.	26.8	B.	14.	8.2	5.	3.2	.112	.352	.16	.192	.796	.3	.496	.013	1.04	7.8	30.	......	—	800
8275	" 24	" 25	*	Little	T. F.2	......	370.	197.6	172.4	35.2	16.8	18.4	B.	15.	9.	4.4	4.6	.112	.336	.112	.224	.796	.204	.592	.008	1.01	7.5	29.	......	—	2,900
8295	" 27	" 28	*	"	T. F.03	......	302.8	175.2	127.6	31.6	15.6	16.	B.	15.	6.7	4.9	1.8	.096	.352	.128	.224	.668	.188	.48	.013	.96	6.8	29.	......	—	1,200
8316	" 29	" 30	*	"	M. F.02	......	297.6	212.4	85.2	21.6	20.	1.6	B.	16.	8.1	4.4	3.7	.104	.384	.256	.128	.508	.332	.176	.016	1.08	6.4	29.	......	....	2,300
8342	" 31	Sept. 1	*	Much	M. F.02	......	338.8	193.2	145.6	32.4	24.	8.4	B.	15.	8.8	5.1	3.7	.064	.288	.192	.096	.568	.348	.22	.006	.92	6.5	29.	......	....	3,100
8363	Sept. 3	" 5	*	Cons'd	M. F.04	......	317.6	234.	83.6	35.2	12.	23.2	B.	17.	7.3	4.5	2.8	.064	.192	.176	.016	.472	.444	.028	.013	1.12	6.9	28.	......	....	1,700
8372	" 5	" 6	*	Much	M.	......	366.	219.6	146.4	23.2	14.	9.2	B.	14.	10.6	4.6	6.	.112	.4	.224	.176	.688	.38	.308	.008	1.2	6.7	27.	......	—	30,000
8407	" 7	" 8	*	"	M. F.02	......	326.4	293.6	32.8	25.6	21.2	4.4	DB.	16.	8.2	4.2	4.	.112	.304	.128	.176	.696	.416	.28	.011	1.12	6.4	28.	......	—	1,400
8421	" 10	" 11	*	"	M. F.08	......	329.6	225.2	101.4	23.2	14.	9.2	B.	18.	7.6	4.6	3.	.064	.256	.24	.016	.504	.384	.12	.012	1.48	6.2	29.	......	—	5,700
8451	" 12	" 13	*	Cons'd	M. F.03	......	300.4	242.4	58.	26.	20.8	5.2	B.	18.	7.1	5.	2.1	.064	.224	.192	.032	.508	.416	.082	.013	.12	6.1	28.	......	—	1,650
8470	" 14	" 15	*	"	M. F.01	......	281.8	236.4	48.4	29.6	16.	13.6	B.	18.	6.9	5.4	1.5	.048	.144	.124	.02	.476	.336	.14	.02	.12	5.8	26.	......	—	1,650
8175	" 17	" 18	*	"	M. F.01	......	296.	230.4	65.6	24.	17.6	6.4	B.	16.	6.7	5.7	1.	.096	.21	.16	.08	.54	.272	.268	.025	1.16	5.7	26.	......	+	1,300
8500	" 19	" 20	*	"	M. F.01	......	302.8	225.2	77.6	23.6	20.4	3.2	B.	15.	7.4	5.4	2.	.112	.336	.192	.234	.6	.448	.152	.025	1.08	5.6	20.	......	—	3,150
8512	" 21	" 22	*	Little	M. F.04	......	303.2	235.2	68.	22.	20.4	1.6	B.	16.	7.7	6.	1.7	.104	.256	.....	.....	.504	.352	.142	.026	.56	5.7	20.	......	+	900
8532	" 24	" 25	*	Cons'd	M. F.15	......	304.4	234.8	69.6	42.4	23.2	19.2	B.	16.	6.2	5.9	.3	.064	.324	.128	.196	.636	.432	.204	.044	.82	6.1	22.	......	?	2,100
8545	" 26	" 27	*	"	M. F.15	......	288.8	218.	70.8	37.2	22.	15.2	B.	14.	8.	6.8	1.2	.16	.352	.208	.144	.536	.....	.....	.034	.76	6.6	21.	......	+	8,500
8575	" 28	Oct. 1	*	"	M.	......	282.8	211.4	38.4	18.8	16.4	2.4	......	27.	5.9	5.3	.6	.056	.272	.144	.128	.476	.....	.....	.03	1.28	....	....	......	....	....
8581	Oct. 1	" 2	*	"	M. F.4	......	278.4	231.4	44.	25.2	21.6	3.6	......	14.	7.4	6.5	.9	.112	.32	.24	.08	.608	.592	.016	.02	1.	8.5	22.	......	—	1,300
8603	" 3	" 4	†	Little	C. F.05	......	271.6	246.4	25.2	27.6	25.2	2.4	......	16.	6.	5.9	.1	.16	.24	.224	.016	.544	.521	.02	.015	.96	....	....	......	+	4,900
8628	" 5	" 8	†	"	M. F.03	......	273.6	248.4	25.2	30.	27.6	2.4	Bh.	17.	6.	5.6	.4	1.12	.256	.192	.064	.528	.....	.....	.002	1.16	....	....	......	?	900

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 61.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, GRAFTON. (Regulars and Extras.)

Report of ARTHUR W. PALMER.
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dis-solved.	Residue on Evaporation. Sus-pended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Igni-tion.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dis-solved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Am-monia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dis-solved.	Organic Nitrogen. Sus-pended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6625	Jan. 4	Jan. 5	*	Cons'd	M. F.05	......	232.4	210.8	21.6	23.2	21.2	2.	B.	9.5	13.	9.3	3.7	.08	.352	.208	.144	.76	.328	.432	.007	.16	2.9	0.	......	—	9,600
6656	" 10	" 11	*	"	M. F.1	......	206.4	192.4	14.	20.	46.8	3.2	B.	4.8	11.6	9.3	2.3	.012	.48	.176	.304	.792	.344	.448	.003	.08	4.2	0.	......	+	6,000
6706	" 17	" 18	+	"	M. F.06	......	204.8	178.8	26.	39.2	26.4	12.8	B.	4.4	40.7	8.8	1.9	.024	.352	.176	.176	.88	.384	.496	.001	.08	3.5	3.	......	+	6,200
6750	" 24	" 25	*	Much	M. F.06	......	374.4	180.4	94.	30.4	20.	10.4	B.	3.8	11.2	5.2	6.	.028	.352	.176	.176	.8	.512	.288	.008	.48	5.1	4.	......	+	34,750
6784	" 28	" 31	*	Cons'd	M. F.1	......	234.4	168.8	65.6	30.8	18.1	12.4	B.	3.4	11.	10.6	3.4	.404	.381	.476	.208	.88	.448	.432	.007	.44	4.9	0	......	+	22,200
6801	" 31	Feb. 2	*	"	M. F.25	......	213.6	172.8	10.8	31.8	22.8	12.	B.	4.	13.3	11.2	2.1	.12	.32	.24	.08	.8	.416	.384	.008	.48	2.8	0.	......	+	12,200
6839	Feb. 5	" 6	*	"	M. F.03	......	202.8	174.	28.8	21.8	11.	10.8	B.	7.1	9.3	8.5	.8	.14	.288	.192	.096	.672	.544	.128	.006	.36	1.5	0.	......	+	14,400
6854	" 6	" 7	*	"	M. F.15	......	226.4	193.6	32.8	32.	26.4	5.6	B.	7.2	10.9	9.4	1.5	.12	.352	.16	.192	.72	.48	.24	.006	.4	2.8	0.	......	+	31,000
6865	" 7	" 8	*	"	M. F.03	......	218.4	181.2	67.2	21.4	13.6	10.8	B.	5.8	13.2	9.2	4.	.090	.368	.24	.128	.96	.32	64	.006	.4	3.8	0.	......	—	51,000
6879	" 9	" 10	§	V. M'ch	M. F.05	......	2134.4	145.2	1989.2	67.6	15.6	52.	B.	3.3	27.	6.8	20.2	.488	4.44	.176	1.264	3.52	.541	2.976	.007	.72	7.8	0.	......	+	107,000
6881	" 10	" 12	§	"	M. F.4	......	779.6	156.8	622.8	55.2	20.8	31.4	B.	4.4	19.4	7.5	11.9	.092	.861	.192	.672	2.08	.416	1.661	.005	.68	7.1	0.	......	+	59,000
6884	" 11	" 13	§	Much	V.M. F.05	......	676.	241.6	434.4	....	22.8	....	B.	4.	12.9	7.5	5.4	.08	.701	.208	.496	2.08	.512	1.568	.012	.68	6.7	0.	......	+	34,800
6889	" 12	" 13	§	V. M'ch	V.M. F.30	......	747.2	161.6	585.6	57.6	18.8	38.8	B.	3.9	18.	8.3	9.7	.10	.736	.256	.48	1.84	.64	1.2	.008	.72	6.7	0.	......	+	69,000
6912	" 14	" 15	*	Much	V.M. F.40	......	531.6	148.8	382.8	38.8	26.	12.8	B.	3.7	17.	8.6	8.4	.112	.672	.221	.448	4.52	.416	1.104	.006	.72	6.6	0.	......	+	80,000
6924	" 17	" 18	*	Cons'd	M. F.50	......	292.8	166.	126.8	37.2	22.	15.2	B.	3.8	16.8	8.1	8.7	.172	.512	.24	.272	.88	.608	.272	.012	.64	6.5	0.	......	+	182,500
6935	" 19	" 20	*	"	M. F.30	......	309.2	166.4	112.8	39.2	26.8	12.4	B.	3.4	12.4	10.6	1.8	.2	.528	.32	.208	1.28	.64	.61	.008	.8	6.8	0.	......	+	119,000
6957	" 21	" 23	*	Much	V.M. F.50	......	318.	137.2	180.8	61.	30.4	33.6	B.	3.3	13.5	11.3	2.2	.301	.688	.352	.336	4.36	.864	.496	.012	.72	....	0.	......	+	116,000
6979	" 22	" 26	*	"	M. F.50	......	428.4	172.	256.4	68.	29.2	38.8	B.	3.4	16.9	11.6	5.3	.316	.688	.352	.336	1.52	.896	.621	.012	.96	8.3	0.	......	+	145,000
6999	Mar. 1	Mar. 3	*	Cons'd	M. F.08	......	210.	152.4	57.6	37.2	17.6	19.6	B.	3.8	13.7	11.2	2.5	.228	.4	.176	.224	.72	.48	.24	.008	.68	6.	0.	......	+	35,500
7006	" 2	" 3	*	"	M. F.5	......	212.4	171.6	40.8	38.4	34.8	3.6	B.	3.9	13.1	11.	2.1	.208	.32	.288	.032	.96	.672	.288	.006	.32	5.6	0.	......	+	31,500
7018	" 5	" 6	*	"	M. F.4	......	218.1	157.6	60.8	16.4	15.2	1.2	B.	4.7	12.9	9.9	3.	.221	.352	.256	.096	.88	.64	.24	.008	.56	5.2	0.	......	—	50,000
7034	" 7	" 8	*	Much	M. F.06	......	777.2	103.2	674.	32.	12.8	19.2	B.	3.4	18.2	7.7	10.5	.208	.8	.208	.592	2.08	.512	1.568	.006	.88	9.3	0.	......	+	73,000
7058	" 9	" 10	*	"	M. F.10	......	499.6	112.8	356.8	25.6	14.4	11.2	B.	3.1	11.8	7.1	7.4	.152	.18	.208	.272	1.11	.512	.928	.007	.64	10.6	0.	......	+	65,500
7071	" 12	" 13	*	"	M. F.50	......	877.2	122.	755.2	52.8	15.2	37.6	B.	2.8	21.1	7.6	13.5	.21	.672	.208	.461	1.92	.48	1.44	.005	.68	13.2	2.	......	+	170,000
7083	" 14	" 15	*	"	M. F.30	......	1583.6	96.	1487.6	68.	14.8	53.2	B.	.9	19.3	8.4	10.9	.3	1.6	.24	1.36	3.52	.512	3.008	.007	.52	16.3	4.	......	+	555,000
7115	" 19	" 20	*	"	M. F.50	......	533.6	125.6	408.	31.8	16.4	18.4	B.	2.0	22.4	8.8	13.6	.352	.736	.256	.48	4.61	.536	1.101	.008	.52	15.6	0.	......	?	247,500
7129	" 21	" 22	*	"	M. F.50	......	516.	105.2	410.8	31.2	16.4	11.8	B.	1.	19.6	8.6	11.	.381	.861	.24	.624	1.72	.792	.928	.008	.52	11.8	3.	......	—	198,000
7154	" 23	" 24	*	"	M. F.60	......	479.2	199.6	279.6	37.6	21.8	12.8	B.	1.3	21.	9.5	14.5	.44	.72	.32	.4	2.36	.92	1.44	.008	.61	14.6	3.	......	+	99,500
7172	" 26	" 28	*	"	M. F.30	......	367.2	108.8	258.4	32.	13.6	18.4	B.	2.8	17.1	9.5	7.6	.42	.56	.301	.256	1.18	.696	.784	.01	.48	13.	4.	......	—	88,000
7186	" 28	" 29	*	"	M. F.20	......	320.	111.4	205.6	22.4	17.2	5.2	B.	3.2	15.	8.2	6.8	.384	.512	.256	.256	1.272	.6	.672	.007	.18	12.7	4.	......	—	85,000
7207	" 30	Apr. 2	*	"	M. F.20	......	344.	107.6	236.4	28.1	16.8	11.6	B.	3.1	16.2	8.8	7.4	.318	.18	.221	.256	1.144	.44	.701	.012	.6	12.1	4.	......	—	71,000
7211	Apr. 2	" 3	*	Cons'd	M. F.06	......	259.6	125.2	131.4	22.4	13.6	8.8	B.	3.1	11.	7.3	6.7	.332	.448	.272	.176	.952	.612	.34	.008	.6	11.2	5.	......		81,000

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. V.M., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 61—Continued.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, GRAFTON. (Regulars and Extras.)

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
7239	Apr. 4	Apr. 5	*	Cons'd	M. F.15	......	306.8	141.2	165.6	24.	16.8	7.2	B.	3.2	14.3	7.8	6.5	.34	.4	.176	.221	.984	.472	.512	.01	.48	11.8	5.	......	+	66,000
7260	" 6	" 7	§	V.M'ch	VM.F.40	......	1206.	170.8	1035.2	50.8	29.6	21.2	B.	2.4	31.5	9.3	22.2	.244	1.312	.24	1.072	3.	.536	2.461	.018	1.08	13.	4.	......	—	300,000
7269	" 9	" 10	§	"	VM.F.30	......	1024.	116.8	907.2	46.8	22.8	21.	B.	1.5	27.6	9.3	18.3	.272	1.088	.304	.784	2.52	.76	1.76	.017	1.01	13.7	9.	......	—	210,000
7291	" 11	" 12	*	Cons'd	M. F.60	......	684.	116.4	567.6	59.2	14.4	44.8	B.	2.4	21.9	8.6	13.3	.28	1.021	.256	.768	2.36	.632	1.728	.022	1.08	13.1	8.	......	+	111,000
7314	" 13	" 14	*	"	M. F.06	......	440.4	122.4	318.	47.2	29.2	18.	B.	3.	18.3	7.9	10.4	.188	.64	.288	.352	2.04	.664	1.376	.022	.8	12.5	8	......	....	36,000
7326	" 16	" 17	*	"	M. F.30	......	302.4	141.2	161.2	22.	21.2	.8	B.	3.5	14.4	8.2	6.2	.14	.432	.272	.16	1.08	.664	.416	.022	.68	11.5	11.	......	+	59,000
7350	" 18	" 19	*	"	M. F.30	......	216.	127.6	118.4	24.4	18.8	5.6	B.	3.3	12.8	7.5	5.3	.096	.32	.208	.112	.92	.6	.32	.017	.64	10.9	11.	......	+	22,000
7395	" 23	" 24	§	V.M'ch	VM.F.40	......	1171.6	118.4	1053.2	64.	16.8	47.2	B.	2.	21.7	6.6	15.1	.044	1.28	.176	1.104	2.92	.44	2.48	.026	.8	12.5	14.	......	+	74,000
7422	" 25	" 26	*	"	M. F.40	......	775.2	128.	647.2	36.8	31.2	5.6	B	3.	19.9	8.3	11.6	.08	1.184	.208	.976	2.2	.504	1.696	.03	.72	12.7	15.	......	+	68,000
7451	May 2	May 3	*	Cons'd	M. F.05	......	311.6	137.2	174.4	32.8	20.8	12.	B.	3.4	14.9	8.2	6.7	.016	.416	.24	.176	1.14	.484	.656	.011	.6	10.7	19.	......	+	15,000
7499	" 9	" 10	*	"	M. F.3	......	261.8	102.	162.8	30.4	21.2	9.2	B.	3.	17.6	11.9	5.7	.04	.4	.272	.128	1.06	.84	.22	.006	.12	12.2	18.	......	+	17,000
7560	" 16	" 17		....	M. F.2	......	326.4	123.6	202.8	41.2	23.2	18.	B.	3.	18.5	9.7	8.8	.056	.448	.176	.272	1.06	.356	.704	.02	.2	8.5	23.	......	....	12,500
7601	" 23	" 24	§	V.M'ch	VM.F.2	......	491.8	147.2	347.6	54.4	24.4	30.	B.	3.	17.1	10.9	6.2	.010	.48	.24	.24	.964	.42	.544	.013	1.	8.4	19.	......	—	4,300
7628	" 30	" 31	*	Cons'd	M. F.10	......	270.4	136.4	134.	39.2	21.8	14.4	B.	3.4	12.	8.5	3.5	.012	.352	.192	.16	.96	.452	.508	.008	.48	6.5	24.	......	+	4,100
7673	June 6	June 8	*	"	M. F.05	......	277.6	136.	141.6	36.	30.8	5.2	B.	3.9	12.6	8.2	4.4	.024	.352	.128	.224	.9	.324	.576	.006	.2	6.	25.	......	—	6,000
7723	" 13	" 15	*	"	M. F.15	......	239.2	165.2	74.	35.6	28.	7.6	B.	4.	9.4	8.1	1.3	.028	.32	.16	.16	.708	.28	.428	.001	.16	5.2	26.	......	+	1,000
7749	" 20	" 21	*	Little	M. F.05	......	257.2	181.6	75.6	38.8	22.8	16.	B.	3.7	11.8	7.5	4.3	.040	.288	.128	.16	.66	.292	.368	.001	.12	5.2	26.	......	—	2,600
7770	" 25	" 26	*	Much	M. F.03	......	562.8	164.	398.8	40.4	22.8	17.6	B.	3.4	16.	6.9	9.1	.012	.48	.112	.368	1.156	.452	.704	.013	.28	....	..	......	....	....
7788	" 27	" 28	+	Little	M. F.01	M'sty	526.4	152.	374.4	43.2	20.8	22.4	B.	3.7	16.2	6.1	10.1	.042	.512	.16	.352	1.416	.356	1.06	.005	.6	5.4	27.	......	—	5,000
7809	" 29	" 30	*	Cons'd	T. F.20	"	427.6	171.6	256.	41.6	31.2	10.4	B.	3.5	15.7	9.8	5.9	.062	.48	.112	.368	.836	.292	.544	.004	.52	....	....	......	....	....
7812	July 2	July 3	*	Much	T. F.05	......	318.	220.	98.	36.8	34.8	2.	B.	4.	9.9	6.8	3.1	.078	.32	.16	.16	.868	.324	.544	.009	.36	1.5	-27.	......	—	1,200
7836	" 4	" 5	*	Little	T. F.03	......	312.8	178.4	134.4	34.8	18.8	16.	B.	7.7	12.	6.8	5.2	.058	.324	.176	.148	.772	.34	.432	.005	.21	....	....	......	....	....
7819	" 6	" 7	*	Much	T. F.02	......	438.4	178.8	259.6	40.8	19.6	21.2	B.	4.1	15.5	8.	7.5	.068	.416	.176	.24	.836	.196	.64	.005	.36	....	....	......	....	....
7885	" 9	" 10	*	Little	T. F.05	......	348.1	189.2	159.2	22.	7.2	4.8	B.	4.8	12.2	6.9	5.3	.06	.32	.176	.144	1.092	.18	.912	.005	.4	4.1	-29.	......	+	4,700
7900	" 11	" 12	*	"	T. F.05	......	361.2	178.	183.2	38.4	22.8	15.6	B.	5.3	12.	7.9	4.1	.038	.416	.176	.21	.772	.356	.416	.007	.2	4.	29.	......	—	2,250
7918	" 13	" 14	*	"	T. F.02	......	297.2	192.4	104.8	43.2	38.8	4.4	B.	4.1	11.	8.2	2.8	.072	.272	.112	.16	.584	.272	.312	.002	.44	3.9	30.	......	—	2,300
7927	" 16	" 17	*	"	M. F.02	......	280.8	181.2	99.6	20.	17.2	2.8	B.	4.2	11.3	6.5	4.8	.08	.336	.176	.16	.9	.308	.592	.008	.36	6.9	30.	......	—	4,700
7967	" 18	" 19	*	"	T. F.02	......	278.	160.4	117.6	24.8	21.6	3.2	B.	4.6	11.2	6.4	4.8	.102	.304	.144	.16	.6	.308	.292	.008	.24	4.3	26.	......	—	3,800
7987	" 20	" 21	*	Much	T. F.02	......	342.8	162.8	180.	28.8	25.2	3.6	B.	4.	12.2	6.8	5.4	.078	.416	.176	.24	.6	.292	.308	.005	.32	5.	27.	......	—	5,100
7991	" 23	" 24	*	"	M. F.02	......	354.8	138.4	216.4	34.8	20.8	14.	B.	3.3	12.9	6.7	6.2	.074	.336	.192	.144	.68	.212	.468	.001	.36	6.3	28.	......	?	3,300
8032	" 25	" 26	*	Cons'd	M. F.02	......	407.2	129.2	278.	62.	43.2	18.8	B.	2.6	15.1	7.7	7.4	.098	.48	.144	.336	1.4	.292	1.108	.005	.6	6.2	27.	......	+	3,500

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 61—Concluded.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, GRAFTON. (Regulars and Extras.)

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
8036	July 27	July 28	*	Cons'd	M. F.02	......	541.6	116.8	424.8	77.2	38.	39.2	B.	2.9	17.4	11.6	5.8	.050	.672	.208	.464	1.384	.516	.868	.002	.68	7.	28.	......	—	3.100
8048	" 30	" 31	*	Much	M. F.02	......	564.	123.2	440.8	69.2	26.4	42.8	B.	2.6	19.	8.	11.	.064	.544	.16	.384	1.224	.388	.836	.004	.68	7.3	29.	......	—	2.100
8066	Aug. 1	Aug. 2	*	Cons'd	M. F.02	......	582.4	117.2	465.2	62.	26.8	35.2	B.	2.9	21.3	7.4	13.9	.12	.624	.272	.352	1.24	.34	.9	.003	.68	7.	28.	......	—	4.650
8087	" 3	" 4	*	"	M. F.02	......	423.2	138.	285.2	58.	27.2	30.8	B.	2.8	16.9	8.4	8.5	.072	.448	.208	.24	1.	.404	.596	.003	.6	6.8	28.	......	—	2.000
8097	" 6	" 7	*	"	T. F.01	......	285.2	142.	143.2	58.4	47.2	11.2	B.	2.7	14.7	12.8	1.9	.082	.384	.312	.042	.76	.548	.212	.002	.44	6.1	30.	......	+	1.450
8127	" 8	" 9	*	"	M. F.02	......	255.6	149.2	106.4	52.4	48.8	3.6	B.	5.8	15.6	10.8	4.8	.086	.352	.304	.048	.92	.452	.468	.004	.36	5.5	30.	......		7.400
8145	" 10	" 11	*	"	M. F.05	......	226.8	132.4	94.4	41.4	35.2	9.2	B.	3.2	13.9	10.9	3.	.08	.448	.272	.176	.84	.38	.46	.005	.36	5.	30.	......	?	3.350
8156	" 13	" 14	*	Little	T. F.02	......	235.2	155.6	79.6	39.6	37.6	2.	B.	3.	15.4	10.	5.4	.08	.32	.24	.08	1.	.43	.57	.001	.28	4.4	29.	......		4.150
8181	" 15	" 16	*	"	T. F.02	......	216	141.6	74.4	37.2	32.	5.2	B.	3.2	11.8	8.4	3.4	.088	.416	.192	.224	.84	.316	.524	.002	.2	4.3	29.	......	—	4.600
8215	" 17	" 18	*	"	T. F.01	......	286.8	214	72.8	20.4	18.8	1.6	B.	1.	6.7	4.6	2.1	.178	.304	.224	.08	.6	.576	.024	.023	.88	4.2	29.	......	+	5.900
8220	" 20	" 21	*	"	T. F.01	......	383.6	148.8	234.8	42.	22.4	19.6	B.	3.6	12.7	7.2	5.5	.130	.512	.208	.304	1.	.252	.748	.007	.44	6.8	29.	......	+	3.250
8255	" 22	" 23	*	Cons'd	M. F.2	......	1066.8	125.6	941.2	62.8	22.	40.8	DB.	4.2	23.1	6.5	16.6	.181	1.04	.176	.861	1.88	.264	1.616	.008	.8	7.8	28.	......	+	1.200
8274	" 24	" 25	*	"	M. F.2	......	691.6	120.4	571.2	37.6	20.4	17.2	DB.	3.	19.7	6.4	13.3	.150	.576	.192	.384	1.48	.332	1.148	.002	.52	7.5	29.	......	—	3.100
8291	" 27	" 28	*	"	M. F.2	......	423.2	132.	291.2	38.	20.	18	DB.	3.	16.	7	9.	.128	.384	.192	.192	1.16	.252	.908	.005	.64	6.8	29.	......	—	1.700
8317	" 29	" 30	*	"	M. F.02	......	369.6	147.6	222.	33.2	14.8	18.4	DB.	3.6	14.8	7.2	7.6	.114	.384	.24	.114	.664	.188	.476	.001	.44	6.4	27.	......		2.250
8314	" 31	Sept. 1	*	Much	M. F.15	......	314.8	138.8	176.	34.	29.6	4.4	DB.	3.2	14.4	8.	6.4	.120	.416	.256	.16	.568	.332	.236	.003	.32	....	....	......	—	2.300
8362	Sept. 3	" 5	*	Cons'd	M. F.35	......	325.2	167.6	157.6	32.8	23.2	9.6	DB.	3.	16.1	9.2	6.9	.122	.368	.192	.176	.696	.572	.124	.003	.32	6.9	27.	......	—	1.500
8371	" 5	" 6	*	Much	M.	......	309.6	154.8	154.8	24.4	20.4	4.	DB.	2.6	19.3	8.8	10.5	.088	.4	.24	.16	.664	.412	.252	.005	.32	6.7	28.	....	+	2.750
8408	" 7	" 8	*	"	M. F.3	......	297.2	148.4	148.8	31.6	21.6	10.	DB.	2.8	15.2	8.6	6.6	.088	.48	.208	.272	.664	.432	.232	.004	.28	6.4	28.	......		2.750
8420	" 10	" 11	*	"	M. F.1	......	218.	119.6	98.4	35.6	18.4	17.2	DB.	2.6	15.4	9.2	6.2	.144	.512	.256	.256	.6	.544	.056	.004	.28	6.2	28.	......		2.450
8453	" 12	" 13	*	Cons'd	M. F.2	......	216.2	149.6	66.6	34.	24.8	9.2	DB.	3.	17.5	11.2	6.3	.090	.161	.192	.272	.616	.461	.152	.002	.24	6.4	29.	.....	+	2.800
8469	" 14	" 15	*	Much	M.	......	270.8	145.2	125.6	33.2	21.6	11.6	DB.	2.6	17.2	15.3	1.9	.122	.448	.288	.16	.696	.621	.072	.002	.48	5.8	26.	.....	+	1.350
8474	" 17	" 18	*	"	M. F.03	......	274.	148.	126.	38.	13.6	24.4	DB.	2.8	16.2	11.6	4.6	.096	.432	.208	.224	.632	.384	.248	.006	.36	5.7	25.	......		2.000
8501	" 19	" 20	*	"	M. F.04	......	260.8	148.	112.8	40.	27.6	12.4	DB.	2.8	15.4	11.8	3.6	.068	.4	.288	.112	.888	.592	.296	.001	.32	5.6	19.	......	—	2.300
8513	" 21	" 22	*	Little	M. F.4	......	262.4	160.8	101.6	28.	24.	4.	B.	2.8	16.2	13.6	2.6	.104	.384	.304	.08	.792	....	.....	.001	.24	5.7	19.	......		2.300
8533	" 24	" 25	*	Cons'd	M. F.6	......	370.8	150.8	220.	64.	34.8	29.2	DB.	2.4	16.7	14.6	2.1	.144	.48	.256	.224	1.08	.624	.456	.006	.48	6.4	21.	......	—	2.500
8544	" 26	" 27	*	"	M. F.8	......	306.	144.4	161.6	51.6	31.6	20.	B.	2.2	17.6	11.7	5.9	.162	.432	.24	.192	.792	.656	.136	.002	.36	6.6	20.	......	+	11.100
8576	" 28	Oct. 1	*	"	M.	......	354.8	144.	210.8	51.2	26.	25.2	DB.	2.2	17.9	11.8	3.4	.118	.528	.288	.24	1.052	.592	.46	.005	.28	7.6	21.	......	+	10.400
8585	Oct. 1	" 2	*	"	F.1.2	......	282.4	132.4	150.	17.2	36.	11.2	DB.	1.4	22.7	19.3	3.4	.156	.48	.352	.128	1.018	.656	.382	.004	.36	8.5	21.	......	—	1.750
8604	" 3	" 4	*	"	M. F.1.2	.....	372.	153.6	218.4	104.	44.8	59.2	......	1.3	27.6	18.3	9.3	.164	.528	.324	.204	1.28	.624	.656	.002	.44	....	....	......	+	2.900
8629	" 5	" 8	*	"	M.	......	333.6	132.8	200.8	48.	32.8	15.2	DB.	1.4	22.3	18.	1.3	1.12	.56	.256	.304	.944	.64	.301	.003	.237	....	....	.....		7.050

TURBIDITY *Decided. § Very Decided. † Distinct. ‡ Very Slight. ¡ Slight.   COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 62.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, GRAFTON. (Regulars.)

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6626	Jan. 4	Jan. 5	*	Con'sd	M. F.04	......	395.2	382.	13.2	40.4	38.8	1.6	B.	30.	11.8	8.3	3.5	2.24	.416	.288	.128	.92	.552	.368	.07	1.76	2.9	0.	6.	—	87,200
6655	" 10	" 11	†	Little	M. F.03	......	368.	365.2	2.8	28.4	28.	.4	G.	27.	7.5	7.4	.1	2.16	.432	.304	.128	.792	.6	.192	.03	2.28	4.2	0.	3.	—	20,600
6705	" 17	" 18	†	Con'sd	M. F.03	......	338.4	329.6	8.8	47.6	44.4	3.2	B.	16.	7.2	6.5	.7	.704	.32	.208	.112	.72	.544	.176	.03	2.4	3.5	3.	13.	—	41,300
6751	" 21	" 25	*	Much	M. F.2	......	502.4	216.	286.4	40.	22.4	17.6	B.	10.	16.	8.1	7.9	.8	.512	.208	.304	1.12	.704	.416	.03	2.	5.1	4.	......	+	59,000
6802	" 31	Feb. 2	*	Cons'd	M. F.02	......	439.2	311.2	128.	38.	29.2	8.8	G.	21.	10.	8.1	1.9	1.6	.352	.208	.144	.88	.576	.304	.032	2.2	2.8	0.	—9.	—	24,900
6864	Feb. 7	" 8	*	"	M. F.03	......	326.8	271.2	55 6	18.4	12.4	6.	B.	17.	10.9	7.7	3.2	1.36	.384	.176	.208	.8	.576	.224	.018	1.6	3.8	0.	13.	+	258,060
6913	" 14	" 15	§	V.M'ch	V.M.F.6	......	1481.6	170.4	1311.2	72.4	45.6	26.8	B.	5.1	24.7	7.9	16.8	.544	1.376	.288	1.088	3.52	.544	2 976	.013	1.44	6.6	0.	2.	—	240,000
6956	" 21	" 23	*	Much	M. F.2	......	732.8	202.	530.8	83.6	29.2	54.4	B.	8.	16.9	8.3	8.6	.704	.864	.272	.592	1.28	.64	.64	.023	2.	8.3	0.	5.5	+	172,000
6998	Mar. 1	Mar. 3	*	Cons'd	M. F.03	......	574.8	218.	356.8	42.8	25.2	17.6	B.	7.4	16.3	9.8	6.5	.576	.56	.176	.384	1.12	.544	.576	.017	1.88	6.	0.	......	+	262,000
7035	" 7	" 8	*	Much	M. F.05	......	973.2	178.	795.2	56.8	18.8	38.	B.	6.6	17.6	6.4	11.2	.528	.736	.264	.472	1.92	.544	1.376	.012	1.44	9.3	0.	2.	+	233,000
7082	" 14	" 15	*	"	M. F.2	......	799.2	153.2	646.	45.2	21.6	23.6	B.	4.2	16.2	6.2	10.	.32	.608	.208	.4	1.6	.384	1.216	.011	1.4	16.3	4.	4.	+	237,500
7130	" 21	" 22	*	"	M. F.15	......	807.6	133.6	670.	40.8	18.4	22.4	B.	4.8	17.9	6.	11.9	.288	.864	.176	.688	1.88	.6	1.28	.911	1.32	14.8	3.	4.	+	119,000
7185	" 28	" 29	*	Cons'd	M. F.04	......	544.4	149.2	395.2	34.	13.2	20.8	B.	4.4	14	6.	8.	.256	.416	.176	.24	1.112	.408	.704	.01	1.52	12.7	3.	17.	?	48,500
7238	Apr. 4	Apr. 5	*	"	M. F.15	......	375.6	147.6	228.	31.2	18.8	12.4	B.	4.1	13.3	6.	7.3	.256	.32	.176	.144	.696	.472	.224	.017	1.6	11.8	4.	14.5	—	23,500
7295	" 11	" 12	*	"	M. F.04	......	386.4	170.8	215.6	19.2	11.2	8.	B.	5.	11.8	6.2	5.6	.208	.384	.208	.176	.92	.504	.416	.03	1.68	9.	....	2.	+	21,000
7349	" 18	" 19	*	"	M. F.25	......	338.	182.	156.	26.8	23.2	3.6	B.	5.6	11.9	6.6	5.3	.176	.288	.224	.064	.84	.568	.272	.027	1.8	10.9	11.	13.	—	7,000
7423	" 25	" 26	*	"	M. F.20	......	316.8	216.	100.8	36.	27.2	8.8	B.	6.2	10.5	6.7	3.8	.128	.272	.208	.064	.952	.504	.448	.036	1.12	12.7	15.	21.	+	6,700
7450	May 2	May 3	*	Much	M. F.38	......	246.	127.6	118.4	24.4	18.4	5.6	B.	9.3	12.8	7.5	5.3	.096	.32	.208	.112	.92	.6	.32	.017	.64	10.7	20.	24.	—	2,400
7500	" 9	" 10	*	"	M. F.03	......	368.	229.6	138.4	24.8	22.4	2.4	B.	8.4	12.	7.6	4.4	.144	.384	.256	.128	1.38	.548	.832	.03	.96	12.2	19.	21.	+	17,600
7561	" 16	" 17	*	"	M. F.02	......	329.2	253.6	75.6	36.	34.8	1.2	B.	10.	10.9	7.5	3.4	.072	.32	.208	.112	.804	.452	.352	.04	.76	8.5	25.	30.	?	4,050
7603	" 23	" 21	§	V.M'ch	M. F.05	......	374.8	265.2	109.6	46.8	37.2	9.6	B.	10.5	11.4	9.4	2.	.064	.32	.192	.128	.74	.36	.38	.038	.9	8.4	20.	27.	—	4,100
7627	" 30	" 31	*	Cons'd	M. F.07	......	364.	265.6	98.4	40.8	26.8	14.	B.	14.	10.8	7.6	3.2	.032	.32	.208	.112	.84	.52	.32	.024	1.48	6.5	25.	27.	—	6,100
7674	June 6	June 7	*	"	M. F.03	......	352.	243.6	108.4	36.	35.6	.4	B.	12.	9.5	6.6	2.9	.032	.288	.16	.128	.8	.468	.332	.008	1.4	6.	25.	32.	+	19,550
7722	" 13	" 14	*	"	M. F.04	......	360.8	258.8	102.	37.6	37.2	.4	B.	14.	7.6	5.8	1.8	.048	.272	.176	.096	.9	.58	.32	.008	1.76	5.2	27.	31.	+	4,400
7750	" 20	" 21	*	Little	M. F.05	......	308.8	270.8	38.	35.6	35.2	.4	B.	13.	8.	6.5	1.5	.032	.256	.192	.064	.42	.356	.064	.013	1.48	5.2	27.	28.	—	1,050
7769	" 25	" 26	*	Much	M. F.03	......	360.8	267.6	93.2	31.2	28.4	2.8	B.	13.	8.1	6.7	1.4	.048	.272	.24	.032	.596	.58	.016	.007	1.04	....	....	29.	....	....
7813	July 2	July 3	*	"	T. F.03	......	384.8	255.2	129.6	42.8	29.2	13.6	B.	14.	8.2	6.4	1.8	.040	.24	.176	.064	.564	.436	.128	.019	1.	....	....	......	....	....
7848	" 6	" 7	*	"	T. F.02	......	343.2	253.2	90.	35.6	31.2	4.4	B.	15.	7.7	6.9	.8	.072	.208	.176	.032	.612	.372	.24	.13	1.28	14.6	29.	......	—	560
7917	" 13	" 14	*	"	T. F.03	......	306.8	243.6	63.2	26.4	25.6	.8	B.	13.	6.7	6.6	.1	.096	.24	.16	.08	.568	.35	.218	.015	1.32	3.9	31.	......	+	3,300
7986	" 20	" 21	*	Little	T. F.02	......	347.6	210.4	137.2	31.2	29.2	2.	B.	13.	8.9	6.5	2.4	.048	.272	.176	.096	.452	.276	.176	.035	.88	5.	27.	......	+	8,350
8035	" 27	" 28	*	"	T. F.02	......	342.4	228.8	113.6	56.	56.	0.0	B.	13.	11.9	7.7	4.2	.048	.552	.176	.176	.641	.372	.272	.018	.88	7.	29.	......	—	1,800
8096	Aug. 6	Aug. 7	*	"	T. F.01	......	272.	243.8	28.2	44.4	38.	6.4	G.	18.	6.7	5.1	1.6	.112	.256	.16	.096	.644	.452	.192	.014	.92	6.1	30.	......	—	500
8157	" 13	" 14	*	"	T. F.01	......	284.8	232.8	52.	40.8	34.8	6.	B.	22.	6.6	4.7	1.9	.08	.304	.176	.128	.74	.428	.312	.016	1.08	4.4	30.	......	+	5,275
8221	" 20	" 21	*	"	T. F.01	......	328.	198.8	129.2	28.4	18.4	10.	B.	17.	7.3	4.7	2.6	.08	.304	.228	.08	.6	.316	.284	.019	1.12	6.8	30.	......	+	2,700
8295	" 27	" 28	*	"	T. F.03	......	302.8	175.2	127.6	31.6	15.6	16.	B.	15.	6.7	4.9	1.8	.096	.352	.128	.224	.668	.188	.48	.013	.96	6.8	29.	......	+	1,200
8372	Sept. 5	Sept. 6	*	Much	M.	......	366.	219.6	146.4	23.2	14.	9.2	B.	14.	10.6	4.6	6.	.112	.4	.224	.176	.688	.38	.308	.008	1.2	6.7	27.	......	—	30,000
8454	" 12	" 13	*	Cons'd	M. F.03	......	300.4	242.4	58.	26.	20.8	5.2	B.	18.	7.1	5.	2.1	.064	.224	.192	.032	.508	.416	.082	.013	.12	6.1	28.	......	—	1,650
8500	" 19	" 20	*	"	M. F.01	......	302.8	225.2	77.6	23.6	20.4	3.2	B.	15.	7.4	5.4	2.	.112	.336	.192	.234	.6	.448	.152	.025	1.08	5.6	20.	......	—	3,150
8545	" 26	" 27	*	"	M. F.15	......	288.8	218.	70.8	37.2	22.	15.2	B.	14.	8.	6.8	1.2	.16	.352	.208	.144	.536	.....	.....	.034	.76	6.6	21.	......	+	8,500
8603	Oct. 3	Oct. 4	†	Little	C. F.05	......	271.6	216.4	25.2	27.6	25.2	2.4	B.	16.	6.	5.9	.1	.16	.24	.224	.016	.544	.524	.02	.015	.96	....	....	......	+	4,900

TURBIDITY—*Decided. §Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 63.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, GRAFTON. (Regulars.)

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Dissolved.	Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	By Dissolved.	By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Dissolved.	Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6625	Jan. 4	Jan. 5	*	Cons'd	M. F.05	......	232.4	210.8	21.6	23.2	21.2	2.	B.	9.45	13.	9.3	3.7	.08	.352	.208	.144	.76	.328	.432	.007	.16	2.9	0.	6.	—	9,600
6656	" 10	" 11	*	"	M. F.1	......	206.4	192.4	14.	20.	16.8	3.2	B.	4.8	11.6	9.3	2.3	.012	.48	.176	.304	.792	.344	.448	.003	.08	4.2	0.	3.	+	6,000
6706	" 17	" 18	+	"	M. F.06	......	204.8	178.8	26.	39.2	26.4	12.8	B.	4.4	10.7	8.8	1.9	.024	.352	.176	.176	.88	.384	.496	.001	.08	3.5	3.	13.	+	6,200
6750	" 24	" 25	*	Much	M. F.06	......	274.4	180.4	94.	30.4	20.	10.4	B.	3.8	11.2	5.2	6.	.028	.352	.176	.176	.8	.512	.288	.008	.48	5.1	4.	17.	+	34,700
6801	" 31	Feb. 2	*	Cons'd	M. F.25	......	213.6	172.8	40.8	34.8	22.8	12.	B.	4.	13.3	11.2	2.1	.12	.32	.24	.08	.8	.416	.384	.008	.48	2.8	0.	9.	+	12,200
6865	Feb. 7	" 8	*	"	M. F.03	......	248.4	181.2	67.2	21.4	13.6	10.8	B.	5.8	13.2	9.2	4.	.09	.368	.24	.128	.96	.32	.64	.006	.4	3.8	0.	13.	—	51,000
6912	" 14	" 15	*	Much	M. F.4	......	531.6	148.8	382.8	38.8	26.	12.8	B.	3.65	17.	8.6	8.4	.112	.672	.224	.448	1.52	.416	1.104	.006	.72	6.6	0.	2.	+	80,000
6957	" 21	" 23	*	"	M. F.5	......	318.	137.2	180.8	64.	30.4	33.6	B.	3.3	13.5	11.3	2.2	.304	.688	.352	.336	1.36	.864	.496	.012	.72	....	0.	5.5	+	116,000
6999	Mar. 1	Mar. 3	*	"	VM. F.08	......	210.	152.4	57.6	37.2	17.6	19.6	B.	3.8	13.7	11.2	2.5	.228	.4	.176	.224	.72	.48	.24	.008	.68	6.	0.	......	+	35,500
7058	" 9	" 12	*	"	M. F.4	......	499.6	142.8	356.8	25.6	14.4	11.2	B.	3.4	14.8	7.4	7.4	.152	.48	.208	.272	1.44	.512	.928	.007	.64	10.6	0.	2.	+	65,500
7115	" 19	" 20	*	"	M. F.5	......	533.6	125.6	408.	34.8	16.4	18.4	B.	2.	22.4	8.8	13.6	.352	.736	.256	.48	1.64	.536	1.104	.008	.52	15.6	0.	4.	?	247,500
7172	" 26	" 28	*	"	M. F.30	......	367.2	108.8	258.4	32.	13.6	18.4	B.	2.8	17.1	9.5	7.6	.42	.56	.304	.256	1.48	.696	.784	.01	.48	13.	4.	17.	-	88,000
7214	April 2	April 3	*	"	M. F.06	......	259.6	125.2	134.4	22.4	13.6	8.8	B.	3.4	14.	7.3	6.7	.332	.448	.272	.176	.952	.612	.34	.008	.6	11.2	5.	14.5	—	81,000
7269	" 9	" 10	§	V. M'ch	VM. F.30	......	1024.	116.8	907.2	46.8	22.8	24.	B.	1.5	27.6	9.3	18.3	.272	1.088	.304	.784	.252	.76	4.76	.017	1.04	13.7	9.	2.	—	210,000
7326	" 16	" 17	*	Much	M. F.30	......	302.4	141.2	161.2	22.	21.2	.8	B.	3.5	14.4	8.2	6.2	.14	.432	.272	.16	1.08	.664	.416	.022	.68	11.5	11.	13.	+	59,000
7395	" 23	" 24	§	V. M'ch	VM. F.40	......	1471.6	418.4	1053.2	64.	16.8	47.2	B.	2.	21.7	6.6	15.1	.044	1.28	.176	1.104	2.92	.44	2.48	.026	.8	12.5	14.	21.	+	71,000
7451	May 2	May 3	*	Much	M. F.05	......	311.6	137.2	174.4	32.8	20.8	12.	B.	3.4	14.9	8.2	6.7	.016	.416	.24	.176	1.14	.484	.656	.011	.6	10.7	19.	24.	+	15,000
7499	" 9	" 10	*	Cons'd	M. F.30	......	264.8	102.	162.8	30.4	21.2	9.2	B.	3.	17.6	11.9	5.7	.04	.4	.272	.428	1.06	.84	.22	.006	.12	12.2	18.	21.	+	17,000
7560	" 16	" 17	..	....	M. F.2	......	326.4	123.6	202.8	41.2	23.2	18.	B.	3.	18.5	9.7	8.8	.056	.448	.176	.272	1.06	.356	.704	.002	.2	8.5	23.	30.	....	12,500
7604	" 23	" 24	§	V. M'ch	VM. F.2	......	494.8	147.2	347.6	54.4	24.4	30.	B.	3.	17.1	10.9	6.2	.04	.48	.24	.24	.964	.42	.544	.013	1.	8.4	19.	27.	—	4,300
7628	" 30	" 31	*	Cons'd	M. F.10	......	270.4	136.4	134.	39.2	24.8	14.4	B.	3.4	12.	8.5	3.5	.012	.352	.192	.16	.96	.452	.508	.008	.48	6.5	21.	27.	+	4,100
7673	June 6	June 7	*	"	M. F.05	......	270.6	136.	141.6	36.	30.8	5.2	B.	3.9	13.6	8.2	5.4	.024	.352	.128	.224	.9	.324	.576	.006	.2	6.	25.	32.	—	6,000
7723	" 13	" 14	*	"	M. F.15	......	239.2	165.2	74.	35.6	28.	7.6	B.	4.	9.4	8.1	1.3	.028	.32	.16	.16	.708	.28	.428	.001	.16	5.2	26.	31.	+	1,000
7749	" 20	" 21	*	Little	M. F.05	......	257.2	181.6	75.6	38.8	22.8	16.	B.	3.7	11.8	7.5	4.3	.04	.288	.128	.16	.66	.292	.368	.004	.12	5.2	26.	28.	—	2,600
7770	" 25	" 26	*	Much	M. F.03	......	562.8	164.	398.8	40.4	22.8	17.6	B.	3.4	16.	6.9	9.1	.042	.18	.112	.368	1.156	.452	.704	.013	.28	....	....	......	....	....
7812	July 2	July 3	*	"	T. F.02	......	318.	220.	98.	36.8	34.8	2.	B.	4.	9.9	6.8	3.1	.078	.32	.16	.16	.868	.324	.544	009	.36	4.5	27.	......	—	1,200
7885	" 9	" 10	*	Little	M. F.03	......	348.4	189.2	159.2	22.	17.2	4.8	B.	4.8	12.2	6.9	5.3	.06	.32	.176	.144	1.092	.18	.912	.005	.1	4.1	29.	......	+	4,700
7927	" 16	" 17	*	"	M. F.02	......	280.8	181.2	99.6	20.	17.2	2.8	B.	4.2	11.3	6.5	4.8	.08	.336	.176	.16	.9	.308	.592	.008	.36	6.9	30.	......	—	4,700
7994	" 23	" 24	*	Much	M. F.02	......	354.8	138.4	216.4	34.8	20.8	14.	B.	3.3	12.9	6.7	6.2	.074	.336	.192	.144	.68	.212	.468	.001	.36	6.3	28.	......	?	3,300
8048	" 30	" 31	*	"	M. F.02	......	564.	123.2	440.8	69.2	26.4	42.8	B.	2.6	19.	8.	11.	.064	.544	.16	.384	1.224	.388	.836	.001	68	7.3	29.	......	-	2,100
8097	Aug. 6	Aug. 7	*	Cons'd	T. F.01	......	285.2	142.	143.2	58.4	47.2	11.2	B.	2.7	14.7	12.8	1.9	.082	.384	.312	.042	.76	.548	.212	.002	.44	6.1	30.	......	+	1,450
8156	" 13	" 14	*	Little	T. F.02	......	235.2	155.6	79.6	39.6	37.6	2.	B.	3.	15.4	10.	5.4	.08	.32	.24	.08	1.	.43	.57	.004	.28	4.4	29.	......	—	4,150
8220	" 20	" 21	*	"	T. F.01	......	383.6	148.8	234.8	42.	22.4	19.6	B.	5.6	12.7	7.2	5.5	.13	512	.208	.304	1.	.252	.748	.007	.44	6.8	29.	......	+	3,250
8294	" 27	" 28	*	Cons'd	M. F.	......	423.2	132.	391.2	38.	20.	18.	DB.	3.	16.	7.	9.	.128	.384	.192	.192	1.16	.252	.908	.005	.64	6.8	29.	......	—	1,700
8371	Sept. 5	Sept. 6	*	Much	M.	......	309.6	154.8	154.8	24.4	20.4	4.	DB.	2.6	19.3	8.8	10.5	.088	.4	.24	.16	.664	.412	.252	.005	.32	6.7	28.	......	+	2,750
8453	" 12	" 13	*	Cons'd	M. F.2	....	216.2	149.6	66.6	34.	24.8	9.2	DB.	3.	17.5	11.2	6.3	.09	.464	.192	.272	.616	.464	.152	.002	.24	6.1	29.	......	+	2,800
8501	" 19	" 20	*	"	M. F.04	......	260.8	148.	112.8	40.	27.6	12.4	DB.	2.8	15.4	11.8	3.6	.068	.4	.288	.412	888	.592	.296	.004	.32	5.6	19.	......	-	2,300
8541	" 26	" 27	*	"	M. F.8	......	306.	144.4	161.6	51.6	31.6	20.	B.	2.2	17.6	11.7	5.9	.162	.432	.24	.192	.792	.656	.136	.002	.36	6.6	20.	......	+	11,100
8604	Oct. 3	Oct. 4	*	"	M. F.2	......	372.	153.6	218.4	104.	44.8	59.2	B.	1.3	27.6	18.3	9.3	.164	.528	.324	.204	1.28	.624	.656	.002	.14	....	....	......	+	2,900

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 64.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL.
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 FEET FROM ILLINOIS SHORE, ALTON.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6620	Jan. 4	Jan. 5	*	Cons'd	M. F.04	......	311.6	292.4	19.2	41.2	40.	1.2	G.	19.2	11.8	9.6	2.2	1.16	.448	.24	.208	1.02	.616	.404	.035	.92	....	0.	4.	—	16,400
6657	" 10	" 11	*	"	M. F.06	......	283.2	261.2	22.	31.6	27.6	4.	G.	11.8	9.5	8.4	1.1	.814	.48	.176	.304	1.08	.472	.608	.014	.92	2.4	0.	0.	—	3.150
6698	" 17	" 18	†	"	M. F.04	......	258.4	252.8	5.6	41.2	40.4	.8	G.	9.4	9.2	8.2	1.	.344	.464	.192	.272	.88	.541	.336	.014	.92	1.4	0.	......	—	16.800
6745	" 21	" 25	*	Much	M. F.03	......	435.6	201.2	234.4	39.6	27.6	12.	B.	7.	15.1	10.5	4.6	.628	.461	.224	.24	1.2	.544	.656	.036	1.32	3.9	0.	......	+	50,800
6811	Feb. 2	Feb. 3	*	Cons'd	M. F.04	......	316.	258.4	57.6	35.6	34.	1.6	B.	12.4	10.4	8.9	1.5	1.228	.368	.208	.16	.8	.544	.256	.019	1.28	.0	0.	......	—	15,200
6856	" 7	" 8	*	"	M. F.04	......	302.	239.6	62.4	37.6	35.2	2.4	B.	12.4	11.8	7.5	4.3	.992	.368	.176	.192	.8	.48	.32	.015	1.28	2.6	11.	......	....	54.000
6906	" 14	" 15	§	VMuch	VM.F.2	......	1483.2	146.	1337.2	80.	20.	40.	B.	4.4	29.7	7.5	22.2	.368	1.44	.288	1.152	3.	.544	2.456	.014	1.12	5.	0.	......	+	96,000
6950	" 21	" 22	*	Much	M. F.2	......	1552.4	175.6	1376.8	123.6	6.4	117.2	B.	6.2	23.3	7.9	15.4	.608	1.184	.272	.912	2.4	.576	1.924	.018	1.32	5.	0.	......	—	131,000
7000	Mar. 2	Mar. 3	*	Cons'd	M. F.01	......	392.	198.	194.	38.	24.4	13.6	B.	6.5	14.1	9.6	4.5	.448	.432	.221	.208	.88	.64	.24	.018	1.36	3.4	0.	......	—	65,000
7053	" 9	" 10	§	Much	VM.F.3	......	1438.8	139.6	1299.2	35.2	14.	21.2	B.	3.8	24.9	5.7	19.2	.384	.896	.208	.688	2.72	.512	2.208	.015	.92	11.6	0.	9.	+	119,000
7085	" 14	" 15	§	VMuch	VM.F.04	......	1204.4	142.4	1062.	42.	12.8	29.2	B.	3.8	23.1	5.8	17.3	.368	.96	.16	.8	2.4	.384	2.016	.009	1.4	17.	4.	6.	+	215.000
7131	" 21	" 22	*	Much	M. F.06	......	878.	135.2	742.8	42.8	15.2	27.6	B.	3.6	18 4	6.	12.4	.272	.672	.16	.512	1.88	.536	1.344	.009	1.2	19.1	0.	......	+	82,000
7180	" 28	" 29	*	"	M. F.06	......	616.	140.8	475.2	37.2	12.8	24.4	B.	4.6	14.6	6.8	7.8	.288	.448	.176	.272	1.08	.472	.608	.013	1.48	11.5	0.	......	+	63,000
7233	April 4	April 5	*	Cons'd	M. F.15	......	417.2	146.	271 2	25.2	17.2	8.	B.	4.2	12.	6.3	5.7	.24	.384	.176	.208	.76	.376	.381	.015	1.68	10.1	9.	.....	—	34,000
7296	" 12	" 13	*	Much	M. F.40	......	531.	109.6	424.4	26.	21.2	4.8	B.	3.3	11.8	7.	4.8	.224	.576	.256	.32	1.06	.388	.672	.031	1.52	11.4	8.	5.	+	15,000
7341	" 18	" 19	*	Cons'd	M. F.04	.....	374.	185.6	188.4	32.4	24.4	8.	B.	5.3	12.2	6.2	6.	.16	.352	.192	.16	1.08	.536	.544	.03	2.2	10.5	10.	10.	—	11.500
7409	" 25	" 26	*	Much	M. F.04	......	340.4	196.4	144.	35.6	28.	7.6	B.	5.7	13.6	7.6	6.	.096	.4	.208	.192	1.24	.44	.8	.031	1.72	11.9	15.	25.	—	12,000
7453	May 2	May 3	*	Cons'd	M. F.03	......	494.4	224.	270.4	33 2	25.2	8.	B.	7.3	13.7	7.4	6.3	.048	.544	.288	.256	1.348	.481	.864	.02	1.41	10.1	20.	23.	—	13,500
7493	" 9	" 10	*	Much	M. F.04	......	606.	205.6	400.4	36.8	20.8	16.	B.	7.7	15.1	7.7	7.4	.088	.528	.256	.272	1.	.58	.42	.025	.8	11.4	19.	16.	+	44,500
7542	" 16	" 17	*	Cons'd	M. F.05	......	452.	247.6	204.4	12.8	22.4	20.4	B.	8.9	13.9	7.8	6.1	.124	.512	.24	.272	1.316	.292	1.024	.03	.76	8.8	24.	29.	+	14,000
7593	" 23	" 24	*	"	M. F.03	......	516.4	259.6	256.8	52.8	42.4	10.4	B.	9.4	14.1	7.8	6.3	.064	.4	.112	.288	.74	.388	.352	025	.92	8.4	19.	21.	+	14,000
7632	" 30	" 31	*	Much	M. F.20	......	281.8	148.	136.8	39.2	34.4	4.8	B.	7.5	11.9	7.7	4.2	.024	.381	.192	.192	.8	.388	.412	.013	.52	7.2	24.	25.	—	2,100
7664	June 6	June 7	*	Cons'd	M. F.03	......	388.8	216.4	172.4	34.	32.4	1.6	B.	7.6	12.7	8.1	4.6	.012	.352	.192	.16	.84	.58	.26	.01	.92	6.1	24.	26.	+	9,000
7714	" 13	" 14	*	"	M. F.03	......	728.8	222.4	506.4	46.4	38.8	7.6	B.	8.5	15.4	7.8	8.3	.024	.48	.24	.24	1.7	.52	1.18	.013	1 08	5.2	24.	26.	+	30.000
7751	" 20	" 21	*	"	M. F.01	......	339.6	239.6	100.	36.8	35.6	1.2	B.	8.	9.8	6.4	3.4	.046	.272	.144	.128	.692	.356	.336	.01	.92	5.3	23.	25.	....	4,000
7793	" 27	" 28	*	Disti'ct	M. F.01	......	480.4	201.6	278.8	56.	33.2	22.8	B.	7.4	13.6	5.4	8.2	.042	.368	.16	.208	1.	.356	.644	.048	.88	7.2	26.	29.	+	9.500
7827	July 4	July 5	*	Little	T. F.03	......	357.2	230.	127.2	45.6	33.6	12.	B.	10.	9.	7.	2.	.110	.24	.176	.064	.552	.484	.068	.012	1.04	5.3	30.	......	....	3,300
7906	" 11	" 12	*	"	T. F 02	......	318.	214.8	103.2	39.2	30.	9.2	B.	9.4	8.3	6.7	1.6	.084	.272	.16	.112	.52	.276	.244	.013	1.08	4.7	28.	......	+	2.000
7976	" 18	" 19	*	"	T. F.02	......	301.6	198.8	102.8	26.4	16.	10.4	B.	9.4	8.5	6.8	1.7	.052	.224	.208	.016	.6	.42	.18	.011	.76	4.5	26.	......	?	4.500
8072	Aug. 1	Aug. 2	*	Cons'd	M. F.02	......	508.4	180.8	327.6	39.2	38.4	.8	B.	8.4	13.8	6.6	7.2	.056	.208	.176	.032	1.	.436	.564	.008	1.08	6.5	29.	......	—	8.000
8120	" 7	" 8	*	"	M. F.02	......	272.8	189.2	83.6	45.6	40.	5.6	B.	10.	11.	7.8	3.2	.110	.448	.208	.24	.92	.436	.484	.01	.52	4.6	31.	......	+	1,100
8190	" 15	" 16	*	Little	T. F.02	......	276.	190.8	85.2	36.	32.	4.	B.	10.6	9.5	6.4	3.1	.096	.32	.288	.032	.76	.54	.22	.008	.52	3.	29.	......	—	1,950
8266	" 22	" 24	*	Cons'd	M. F.05	......	615.6	155.6	490.	52.	18.8	33.2	DB.	8.	14.	5.3	8.7	.112	.72	.24	.48	1.08	.588	.492	.008	.96	5.2	29.	......	—	1,100
8323	" 29	" 30	*	"	M. F.02	......	373.6	178.	195.6	36.	12.4	23.6	B.	9.6	11.2	5.5	5.7	.084	.352	.112	.24	.52	.252	.268	.008	.88	5.2	28.	......	—	3,750
8380	Sept. 5	Sept. 6	§	VMuch	M. F.04	......	376.	208.4	167.6	38.	18.	20.	DB.	10.2	10.4	5.8	4.6	.078	.304	.24	.064	.6	.432	.168	.008	.92	6.	29.	......	—	3,200
8450	" 12	" 13	*	Much	M. F.25	......	323.6	193.2	130.4	39.6	22.8	16.8	B.	9.4	13.5	8.3	5.2	.070	.272	.192	.08	.728	.512	.216	.011	.72	4.7	27.	......	—	5,050
8501	" 19	" 20	*	Cons'd	M. F.15	......	304.8	188.4	116 4	36.4	27.6	8.8	B.	8.	12.7	8.2	4.5	.164	.368	.272	.096	1.3	.576	.724	.015	.56	4.	19.	......	—	6,750
8557	" 26	" 27	*	"	M. F 4	......	320.	176.8	143.2	43.2	28.4	14.8	B.	6.	16.5	11.7	4.8	.136	.48	.32	.16	.92	.64	.28	.015	.56	4.9	21.	......	+	11.750
8611	Oct. 3	Oct. 4	*	"	M. F.01	......	405.2	160.8	244.4	39.2	28.8	10.4	DB.	5.4	25.3	16.5	8.8	.196	.448	.....	.....	1 216	.....	.....	.008	.6	....	....	......	....	....

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.   COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 65.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, ONE-FOURTH DISTANCE FROM ILLINOIS SHORE, ALTON.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6621	Jan. 4	Jan. 5	*	Cons'd	M. F.04	......	293.6	285.	8.6	35.6	35.2	.4	B.	18.	11.7	9.9	1.8	1.04	.4	.24	.16	.84	.488	.352	.03	.72	0.	0.	4.	—	11,600
6658	" 10	" 11	*	"	M. F.06	......	274.4	254.8	19.6	28.4	26.4	2.	B.	10.9	12.4	8.8	3.6	.712	.48	.224	.256	1.08	.472	.608	.014	.72	2.4	0.	0.	—	5,900
6699	" 17	" 18	+	"	M. F.03	......	240.	226.8	13.2	39.6	36.4	3.2	B.	8.2	9.5	8.3	1.2	.24	.48	.208	.272	.92	.512	.408	.012	.76	1.4	0.	......	—	7,600
6746	" 24	" 25	*	Much	M. F.03	......	426.4	186.8	239.6	17.2	25.2	22.	B.	6.	14.8	8.8	6.	.38	.448	.16	.288	1.04	.352	.688	.018	1.24	3.9	0.	......	+	57,600
6812	Feb. 2	Feb. 3	*	Cons'd	M. F.1	......	316.	241.	72.	46.4	38.4	8.	G.	11.2	12.5	8.8	3.7	1.02	.416	.224	.192	.96	.48	.48	.018	1.24	.0	0.	......	—	12,000
6857	" 7	" 8	*	"	M. F.06	......	314.8	244.4	70.4	28.	24.	4.	B.	12.2	11.5	7.9	3.6	.88	.416	.16	.256	.88	.576	.304	.014	1.2	2.6	11.	......	....	76,000
6905	" 14	" 15	§	V.M'ch	VM.F.07	......	1252.	151.6	1100.4	77.2	22.	55.2	B.	4.6	21.3	7.7	16.6	.384	1.44	.272	1.168	2.88	.48	2.4	.015	1.08	5.	0.	......	+	92,000
6951	" 21	" 22	*	Much	M. F.15	......	1223.2	164.	1059.2	117.6	14.8	102.8	B.	5.8	21.7	8.4	13.3	.56	1.056	.272	.784	2.32	.544	1.776	.018	1.22	5.	0.	......	+	171,000
7001	Mar. 2	Mar. 3	*	Cons'd	M. F.06	......	364.8	191.2	173.6	38.4	20.	18.4	B.	6.4	14.1	9.2	4.9	.432	.48	.256	.224	.88	.448	.432	.013	1.32	3.4	0.	......	+	53,500
7054	" 9	" 10	§	Much	VM.F.04	......	1157.2	133.2	1024.	39.2	21.6	17.6	B.	4.4	18.8	6.	12.8	.352	.832	.176	.656	2.56	.352	2.208	.012	.88	11.6	0.	9.	+	101,000
7086	" 14	" 15	§	V.M'ch	VM.F.04	......	1324.	118.8	1205.2	53.6	8.	45.6	B.	3.2	25.8	6.8	19.	.288	.768	.224	.544	2.56	.448	2.112	.006	.68	17.	4.	6.	+	290,000
7132	" 21	" 22	*	Much	M. F.2	......	744.4	119.6	621.8	36.4	16.	20.4	B.	3.6	18.3	7.2	11.1	.432	.896	.192	.704	2.04	.664	1.376	.008	1.	19.1	0.	......	—	255,000
7179	" 28	" 29	*	"	M. F.1	......	470.8	138.	332.8	26.8	18.8	8.	B.	4.	14.3	7.	7.3	.384	.544	.176	.368	1.112	.472	.64	.011	1.12	11.5	0.	......	—	54,000
7236	Apr. 4	Apr. 5	*	Cons'd	M. F.20	......	380.4	142.4	238.	21.8	19.6	5.2	B.	3.8	12.8	6.8	6.	.288	.336	.192	.144	.664	.504	.16	.015	1.36	10.1	9.	......	—	41,000
7297	" 12	" 13	*	"	M. F.10	......	442.8	142.	300.8	32.8	10.	22.8	B.	3.8	16.7	7.8	8.9	.221	.576	.221	.352	1.32	.501	.816	.026	1.16	11.4	8.	5.	+	15,000
7312	" 18	" 19	*	"	M. F.04	......	301.6	164.8	136.8	26.	19.6	6.4	B.	4.4	12.3	6.5	5.8	.176	.32	.176	.144	1.016	.504	.512	.025	1.66	10.5	10.	10.	—	11,000
7410	" 25	" 26	§	V.M'ch	VM.F.30	......	656.	135.6	520.4	52.8	20.4	32.4	B.	.....	22.9	8.6	4.3	.018	.768	.16	.608	1.8	.44	1.36	.03	.84	11.9	15.	25.	+	59,000
7454	May 2	May 3	*	Cons'd	M. F.04	......	284.	153.6	130.4	25.2	22.4	2.8	B.	3.1	14.8	7.9	6.9	.02	.48	.192	.288	.961	.36	.604	.01	.64	10.1	20.	23.	+	29,000
7491	" 9	" 10	*	Much	M. F.3	.....	441.6	156.4	285.2	35.6	20.4	15.2	B.	5.4	16.4	10.7	5.7	.08	.528	.272	.256	1.092	.388	.704	.02	.44	11.4	19.	16.	+	22,000
7543	" 16	" 17	*	Cons'd	M. F.1	......	379.2	186.	193.2	31.	21.6	12.4	B.	6.5	15.9	8.6	7.3	.08	.416	.221	.192	1.06	.548	.512	.025	.4	8.8	21.	29.	+	7,000
7594	" 23	" 24	*	"	M. F.05	......	506.4	192.	314.4	16.	30.4	15.6	B.	5.8	18.1	8.1	10.3	.064	.48	.112	.368	1.06	.26	.8	.02	.52	8.4	19.	21.	+	26,000
7633	" 30	" 31	*	Much	M. F.05	......	363.2	201.2	162.	39.2	32.8	6.4	B.	6.3	13.	6.8	6.2	016	.352	.192	.16	1.028	.452	.576	.015	1.32	7.2	21.	25.	+	6,900
7663	June 6	June 7	*	Cons'd	M. F.03	......	378.	185.2	192.8	31.8	33.6	1.2	B.	6.2	13.1	8.1	5.	.021	.368	.16	.208	.8	.52	.28	.009	.72	6.1	24.	26.	+	9,500
7715	" 13	" 14	*	"	M. F.02	......	589.2	218.8	370.4	52.	40.	12.	B.	7.8	13.3	7.4	5.9	.02	.432	.221	.208	1.94	.484	1.456	.01	1.	5.2	24.	26.	+	10,000
7752	" 20	" 21	*	"	M. F.04	......	329.2	232.4	96.8	38.4	31.8	3.6	B.	6.8	10.6	6.4	4.2	.04	.272	.192	.08	.628	.244	.384	.007	.8	5.3	23.	25.	....	4,000
7794	" 27	" 28	*	"	M. F.01	......	514.	210.4	303.6	69.6	42.	27.6	B.	6.8	11.2	5.6	8.6	.014	.368	.192	.176	1.32	.372	.918	.025	.72	7.2	26.	29.	+	8,000
7828	July 4	July 5	*	Little	T. F.01	......	344.8	219.6	125.2	37.6	26.	11.6	B.	8.5	10.6	7.7	2.9	.092	.304	.16	.144	.552	.42	.132	.012	1.	5.3	30.	......	....	2,100
7905	" 11	" 12	*	"	T. F.02	......	310.4	213.6	96.8	29.2	16.4	12.8	B.	8.3	8.7	7.7	1.	.106	.272	.176	.096	.712	.356	.356	.013	.88	4.7	28.	......	?	5,500
7979	" 18	" 19	*	"	T. F.02	......	301.2	195.2	106.	26.8	20.	6.8	B.	8.6	8.6	7.2	1.4	.062	.272	.192	.08	.84	.308	.532	.012	.68	4.5	26.	......	+	10,300
8071	Aug. 1	Aug. 2	*	Cons'd	M. F.03	......	474.4	152.4	322.	51.2	24.8	26.4	B	6.5	15.8	6.3	9.5	.072	.418	.176	.272	1.08	.356	.724	.004	.68	6.5	29.	......	—	2,200
8121	" 8	" 9	*	"	M. F.02	......	280.8	188.8	92.	63.2	52.	11.2	B.	8.2	12.3	8.4	3.9	.118	.352	.192	.16	.84	.42	.42	.009	.48	4.6	31.	......	+	3,000
8189	" 15	" 16	*	Little	T. F.02	......	276.8	186.8	90.	37.2	35.6	1.6	B.	10.1	9.5	6.6	2.9	.108	.416	.176	.21	.68	.318	.332	.009	.48	3.	29.	......	+	2,800
8267	" 22	" 24	*	Cons'd	M. F.1	......	701.6	138.4	563.2	63.6	20.8	42.8	B.	5.4	18.4	5.7	12.7	.086	.72	.16	.56	1.336	.22	1.116	.003	.96	5.2	29.	......	?	2,050
8324	" 29	" 30	*	"	M. F.03	......	350.4	152.8	197.6	35.6	16.8	18.8	DB.	6.1	12.8	6.2	6.6	.112	.352	.16	.192	.52	.....	.....	.004	.68	5.2	28.	......	—	1,050
8379	Sept. 5	Sept. 6	§	Much	M. F.05	......	333.6	182.8	150.8	31.	12.8	21.2	DB.	7.8	13.8	6.7	7.1	.081	.301	.192	.112	.5	.418	.152	.006	.76	6.	29.	......	—	5,500

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 66.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, ALTON.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine.
6622	Jan. 4	Jan. 5	*	Cons'd	M. F.04	......	282.8	272.8	10.	35.2	33.2	2.	B.	15.6
6659	" 10	" 11	*	"	M. F.06	......	265.6	235.6	30.	24.8	23.2	1.6	B.	8.8
6700	" 17	" 18	†	"	M. F.05	......	229.6	206.8	22.8	32.4	22.	10.4	B	7.
6747	" 24	" 25	*	Much	M. F.2	......	344.	187.6	156.4	45.2	28.	17.2	B.	5.4
6813	Feb. 2	Feb. 3	*	Cons'd	M. F.1	......	305.2	230.	75.2	47.6	40.	7.6	G.	10.6
6858	" 7	" 8	*	"	M. F.04	......	290.8	232.4	58.4	26.4	25.6	8.	B.	11.
6904	" 14	" 15	§	V.M'ch	M. F.15	......	1315.2	152.	1163.2	43.6	20.8	22.8	B.	4.2
6952	" 21	" 22	.	....	....	......	......	......	......	....	......	....	......	......
7002	Mar. 2	Mar. 3	*	Cons'd	M. F.05	......	371.6	172.	199.6	22.	21.2	8.	B.	5.4
7055	" 9	" 10	§	Much	VM.F.1	......	892.	133.6	758.4	36.8	11.2	25.6	B.	3.6
7087	" 14	" 15	§	V.M'ch	VM.F.2	......	1537.6	96.8	1440.8	35.6	12.4	23.2	B.	1
7133	" 21	" 22	*	Much	M. F.3	......	490.8	105.2	385.6	45.6	13.6	32.	B.	2.4
7178	" 28	" 29	*	"	M. F.3	......	364.4	110.4	254.	27.2	21.2	6.	B.	3.
7235	Apr. 4	Apr. 5	*	Cons'd	M. F.25	......	314.4	134.4	180.	28.8	12.	16.8	B.	3.
7298	" 12	" 13	*	Much	M. F.25	......	571.2	167.2	404.	39.2	24.	15.2	B.	1.
7343	" 18	" 19	*	Cons'd	M. F 06	......	251.2	118.	133.2	25.6	13.6	12.	B.	3.
7411	" 25	" 26	*	"	M. F.20	......	829.6	104.8	724.8	63.2	9.6	53.6	B.	1.
7455	May 2	May 3	*	"	M. F.04	......	301.6	125.6	176.	26.8	22.8	4.	B.	3.4
7495	" 9	" 10	*	Much	M. F.40	......	326.8	100.4	226.4	38.4	10.8	27.6	B.	2.8
7541	" 16	" 17	*	Cons'd	M. F.4	......	365.2	121.2	214.	38.4	20.8	17.6	B.	5.2
7595	" 23	" 24	§	V.M'ch	M. F.05	......	570.	141.6	428.4	58.	40.4	17.6	B.	3.6
7631	" 30	" 31	*	"	M. F.20	......	306.	164.	142.	42.4	36.	6.4	B.	4.4
7665	June 6	June 7	*	Cons'd	M. F.02	......	327.2	156.8	170.4	31.2	28.8	2.4	B.	4.6
7716	" 13	" 14	*	"	M. F.04	......	338.	188.4	149.6	48.8	29.2	19.6	B.	6.3
7753	" 20	" 21	*	"	M. F.04	......	296.4	210.4	86.	48.4	46.4	2.	B.	4.8
7795	" 27	" 28	*	....	M. F.01	......	546.	181.2	364.8	60.8	24.4	36.4	B.	5.
7829	July 4	July 5	*	Little	T. F.02	......	320.	184.8	135.2	40.	21.6	18.4	B.	5.4
7904	" 11	" 12	*	"	T. F.02	......	317.2	212.4	104.8	40.4	36.4	4.	B.	6.5
7977	" 18	" 19	*	"	T. F.02	......	300.	172.	128.	26.	20.	6.	B.	5.8
8073	Aug. 1	Aug. 2	*	Cons'd	M. F.02	......	554.4	135.2	419.2	48.	24.	24.	B.	4.2
8122	" 8	" 9	*	"	M. F.02	......	272.4	170.8	101.6	82.8	61.2	21.6	B.	4.8
8188	" 15	" 16	*	Little	T. F.02	......	230.4	159.2	71.2	39.2	33.6	5.6	B.	6.6
8268	" 22	" 24	*	Cons'd	M. F.2	......	884.8	138.	746.8	59.6	22.	37.6	DB.	3.6
8325	" 29	" 30	*	"	M. F.	......	375.2	139.6	235.6	42.	20.8	21.2	DB.	4.
8378	Sept. 5	Sept. 6	§	Much	M.	......	321.6	160.4	161.2	34.	27.2	6.8	DB.	3.4
8449	" 12	" 13	*	"	M. F.25	......	281.	140.	144.	34.4	20.4	14.	DB.	3.8
8503	" 19	" 20	*	Cons'd	M. F.4	......	270.4	153.6	116.8	37.6	26.	11.6	DB.	3.4
8556	" 26	" 27	*	Much	M. F.7	......	314.8	147.2	167.6	48.8	23.6	25.2	DB.	2.8
8610	Oct. 3	Oct. 4	*	"	M. F.9	......	504.	135.6	368.4	50.4	29.2	21.2	......	1.6

Serial No.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6622	11.2	9.1	2.1	.72	.352	.272	.08	.76	.616	.144	.02	.6	.0	0.	4.	—	3,900
6659	10.5	8.8	1.7	.52	.464	.208	.256	1.016	.28	.736	.012	.52	2.4	0.	6.	—	14,200
6700	10.2	8.9	1.3	.12	.4	.24	.16	.88	.64	.24	.006	.56	1.4	0.	......	—	18,200
6747	14.6	9.	5.6	.24	.448	.24	.208	1.04	.64	.4	.013	.8	3.9	0.	......	—	51,000
6813	12.6	9.4	3.2	.884	.368	.224	.144	.768	.576	.192	.014	.96	.0	0.	......	—	29,600
6858	9.2	8.	1.2	.72	.384	.24	.144	.8	.576	.224	.013	.76	2.6	11.	......	....	50,000
6904	23.7	19.5	4.2	.336	1.344	.24	1.104	3.04	.448	2.592	.013	1.08	5.	0.	......	+	140,000
6952	....	....	....	......	......	......	......	......	......	......	......	....	5.	0.	......	+	172,000
7002	14.1	9.4	4.7	.384	.432	.208	.224	.72	.48	.24	.011	.4	3.4	0.	......	+	58,500
7055	17.4	6.6	10.8	.288	.672	.208	.464	2.24	.48	1.76	.011	.8	10.	0.	9.	+	86,000
7087	26.8	9.1	17.7	.368	1.216	.208	1.008	3.04	.544	2.496	.007	.6	17.	4.	6.	+	300,000
7133	21.5	8.8	12.7	.416	.96	.288	.672	2.2	.92	1.28	.008	.56	19.1	0.	......	+	220,000
7178	16.3	8.5	7.8	.4	.576	.192	.384	1.4	.568	.832	.01	56	11.5	0.	......	—	59,000
7235	14.6	7.8	6.8	.256	.384	.224	.16	.856	.536	.32	.012	.68	10.1	9.	......	—	95,500
7298	19.6	9.	10.6	.224	.864	.304	.56	2.12	.728	1.392	.03	1.	11.4	8.	5.	+	82,500
7343	12.5	7.1	5.4	.128	.368	.144	.224	.84	.504	.336	.02	.72	10.5	10.	10.	—	13,000
7411	24.	8.9	15.1	.096	.768	.176	.592	1.96	.408	1.552	.024	.8	11.9	15.	25.	+	73,000
7455	14.6	7.8	6.8	.024	.48	.224	.256	.932	.42	.512	.007	.56	10.1	20.	23.	—	28,000
7495	17.1	11.8	5.3	.08	.48	.224	.256	.84	.48	.36	.008	.32	11.4	19.	16.	+	46,000
7541	17.8	9.7	8.1	.068	.48	.144	.336	.642	.292	.35	.01	.24	8.8	24.	29.	+	13,500
7595	16.6	8.1	8.5	.014	.48	.112	.368	1.156	.196	.96	.015	.32	8.4	19.	21.	+	36,000
7631	12.2	7.4	4.8	.02	.32	.176	.144	.868	.308	.56	.01	.8	7.2	21.	25.	+	6,500
7665	14.3	7.9	6.4	.02	.352	.192	.16	.8	.388	.412	.008	.36	6.1	24.	26.	—	4,000
7716	12.4	7.8	4.6	.032	.352	.176	.176	.98	.52	.46	.008	.48	5.2	24.	26.	—	1,000
7753	9.1	7.9	1.2	.044	.288	.192	.096	.612	.244	.368	.004	.32	5.3	23.	25.	....	1,500
7795	15.1	5.6	9.5	.054	.496	.144	.352	1.32	.244	1.076	.013	.72	7.2	26.	28.	+	11,000
7829	11.8	6.4	5.4	.078	.32	.128	.192	.68	.356	.324	.007	.24	5.3	30.	......	....	3,450
7904	9.3	6.8	2.5	.079	.272	.16	.112	.692	.26	.432	.012	.6	4.7	28.	......	?	5,200
7977	8.7	7.4	1.3	.062	.272	.176	.096	.58	.292	.288	.008	.36	4.5	26.	......	?	12,250
8073	16.7	8.4	8.3	.08	.528	.192	.336	1.16	.372	.788	.005	.72	6.5	29.	......	—	13,500
8122	14.	10.7	3.3	.104	.416	.208	.208	.92	.516	.404	.004	.36	4.6	31.	......	+	4,800
8188	10.8	7.3	3.5	.106	.416	.208	.208	.76	.316	.444	.005	.24	3.	29.	......	+	8,700
8268	21.2	6.1	15.1	.152	.72	.192	.528	1.74	.316	1.424	.002	.76	5.2	29.	......	—	3,200
8325	15.2	6.8	8.4	.102	.48	.192	.288	.92	.284	.636	.003	.44	5.2	28.	......	?	3,350
8378	20.7	8.7	12.	.104	.352	.272	.08	.664	.268	.396	.003	.4	6.	29.	......	?	4,000
8449	17.2	11.6	5.6	.118	.48	.24	.24	.92	.448	.472	.005	.32	4.7	27.	......	+	2,450
8503	15.1	12.7	2.4	.189	.48	.224	.256	.728	.....	......	.007	.48	4.	19.	......	+	7,850
8556	18.	13.9	4.1	.138	.56	.192	.368	.984	.608	.376	.005	.28	4.9	24.	......	+	18,500
8610	27.6	17.7	9.9	.170	.592	.288	.304	1.424	.624	.8	.002	.4	....	....	......	....	....

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 67.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER, T. J. BURRILL, University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, ONE-FOURTH DISTANCE FROM MISSOURI SHORE, ALTON.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dissolv'd	Loss on Ig'n. Susp'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Susp'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6623	Jan. 4	Jan. 5	*	Cons'd	M. F.04	......	255.2	241.6	13.6	26.8	24.8	2.	B.	12.	10.7	9.2	1.5	.42	.384	.24	.144	.76	.448	.312	.013	.44	....	0.	4.	—	4,400
6660	'' 10	'' 11	*	''	M. F.07	......	244.4	212.4	32.	25.2	18.8	6.4	B.	6.4	10.9	9.	1.9	.2	.48	.176	.304	1.12	.448	.672	.006	.2	2.4	0.	0.	—	10,000
6701	'' 17	'' 18	+	''	M. F.05	......	209 2	189.2	20.	34.2	31.2	....	B.	5.2	10.9	9.	1.9	.036	.368	.16	.208	.8	.352	.418	.003	.08	1.4	0.	0.	+	16,800
6748	'' 24	'' 25	*	Much	M. F.06	......	322.1	164.8	157.6	31.6	20.	11.6	B.	4.	14.1	9.2	4.9	.08	.416	.16	.256	.96	.576	.384	.008	.76	3.9	0.	10.	+	43,400
6814	Feb. 2	Feb. 3	*	Cons'd	M. F.1	......	288.8	227.6	61.2	29.6	26.	3.6	G.	9.6	12.8	....	...	.74	.368	.24	.128	.8	.512	.288	.013	1.08	....	0.	0.	—	20,600
6859	'' 7	'' 8	*	''	M. F.1	......	214.	201.2	42 8	20.	20.	....	B.	8.4	9.3	7.6	1.7	.352	.384	.144	.24	.72	.32	.4	.009	.68	2.6	11.	10.	—	36,000
6903	'' 14	'' 15	§	V. M'ch	VM. F.2	......	796.8	146.	650.8	42.8	14.	28.8	B.	3.8	18.8	8.3	10.5	.16	1.04	.208	.832	1.84	.512	1.328	.013	1.	5.	0.	0.	+	136,000
6953	'' 22	'' 22	*	Much	M. F.4	......	558.	156 8	401.2	81	30.1	53.6	RB.	4.6	18.8	9.5	9.3	.416	.88	.304	.576	1.84	.672	1.168	.014	1.08	5.5	0.	0.	+	118,000
7003	Mar. 2	Mar. 3	*	Cons'd	M. F.4	......	222 4	161.6	60 8	21.6	20.8	.8	B.	4.2	13.5	9.8	3.7	.352	.448	.288	.16	.88	.64	.24	.008	.64	3.4	0.	0.	—	34,000
7056	'' 9	'' 10	§	Much	VM. F.15	......	670.	112.	558	40.	16.8	23.2	B.	3.2	17.1	6 8	10.3	.208	.512	.208	.304	1.76	.512	1.248	.009	.84	10.	0.	9.	+	81,000
7088	'' 14	'' 15	§	V. M'ch	VM. F.4	......	1584.	100.1	1183 6	15 2	10.	35.2	B.	.6	25.7	8.5	17.2	.24	1.312	.272	1.04	3.2	.544	2.656	.008	.64	17.	4.	6.	+	290,000
7134	'' 21	'' 22	*	Much	M. F.5	......	577.2	116.4	460.8	38.	15.6	22.4	B.	1.4	19.5	9.3	10.2	.464	.928	.288	.64	2.2	.864	1.336	.01	.68	14.1	0.	......	—	162,500
7177	'' 28	'' 29	*	''	M. F.5	......	359 2	125.6	233 6	27.6	20.8	6.8	B.	3.	16 3	8.6	7.7	.432	.576	.224	.352	1.304	.6	.704	.012	.4	11.5	6.	......	+	66,000
7234	Apr. 4	Apr. 5	*	Cons'd	M. F.06	......	344.	138.	206	16.1	14.	2.4	B.	3.5	14.2	7.5	6.7	.32	.4	.192	.208	.856	.504	.352	.013	.4	10.1	9.	10.	....	....
7299	'' 12	'' 13	*	Much	M. F.10	......	613.2	116.	497.2	37.6	18.	19.6	B.	1.4	25.6	8.8	16.8	.224	.8	.256	.544	2.04	.6	1.44	.032	1.08	11.4	8.	5.	+	72,500
7314	'' 18	'' 19	*	Cons'd	M. F.05	......	260.4	132.	128.4	20.8	17.2	3 6	B.	3.6	13.	7.2	5.8	.112	.368	.208	.16	.81	.44	.4	.02	.72	10 5	10.	10.	—	20,500
7412	'' 25	'' 26	§	V. M'ch	VM. F.30	......	913 6	110.4	803.2	16.1	16.8	29.6	B.	1.1	25.7	7.3	18.4	.08	1.088	.176	.912	2.2	.44	1.76	.025	.72	11.9	15.	25.	+	76,000
7456	May 2	May 3	*	Cons'd	M. F.05	......	328.4	168.8	159 6	22.8	22.	.8	B.	5.3	13.9	8.4	5.5	.04	.528	.176	.352	1.028	.42	.608	.011	.88	10.1	20.	23.		12,000
7496	'' 9	'' 10	*	Much	M. F.40	......	531.	109.6	421 4	26.	21.2	4 8	B.	3.3	17.9	11.8	6.1	.081	.576	.256	.32	1.06	.388	.672	.01	.28	11.4	19.	16.	+	16,000
7541	'' 16	'' 17	*	Cons'd	M. F.2	......	152.8	124.4	328.4	31.2	21.6	9.6	B.	3.8	20.8	9.1	11.7	.071	.576	.144	.432	.74	.452	.288	.015	.1	8.8	24.	29.	+	20,000
7596	'' 23	'' 24	§	V. M'ch	M. F.1	......	619.2	146.4	502.8	58.8	38.4	20 4	B.	3.1	21.1	8.1	13.	.116	.512	.128	.384	1.94	.308	1.632	.022	.4	8.1	19.	21.	+	29,500
7620	'' 30	'' 31	*	Much	M. F.30	......	293 2	150.4	142.8	41.6	34.8	6.8	B.	3.7	11.7	8.	3.7	.022	.288	.224	.064	.74	.5	.24	.013	.18	7.2	24.	25.	+	2,700
7667	June 6	June 7	*	Cons'd	M. F.07	......	321 4	141.6	182.8	11.4	21.2	23.2	B.	3.9	13.3	8.5	4.8	.032	.384	.112	.272	.8	.154	.616	.01	.4	6.1	21.	26.	+	11,000
7717	'' 13	'' 14	*	''	M. F.04	......	263.6	180.8	82.8	12.4	27.2	15 2	B.	4.4	12.5	8.3	4.2	.02	.32	.192	.128	.9	.452	.448	.007	.08	5.2	24.	26.	+	1,000
7751	'' 20	'' 21	*	''	M. F.05	......	275.6	192.	83.6	40.4	38.	2.4	B.	3.6	11.	9.5	1.5	.036	288	.16	.128	.58	.244	.336	.001	.08	5.3	23.	25.	....	3,500
7796	'' 27	'' 28	*	''	M. F.01	......	360 4	164.4	396.	56.8	28.	28.8	B.	3.7	15.1	5.7	9.4	.074	.528	.304	.224	1.288	.296	.992	.013	.56	7.2	26.	28.	+	11,500
7830	July 4	July 5	*	Little	T. F.02	......	311.2	181.2	130.	27.2	24.8	2 4	B	3.8	11.7	7.	4.7	.072	.304	.112	.192	.68	.228	.452	.004	.28	5.3	30.	28.	....	1,750
7903	'' 11	'' 12	*	''	T. F.05	......	319.6	195.6	124.	46.8	38.1	8.4	B.	4.8	10.7	7.1	3.6	.082	.32	.176	.144	.721	.212	.512	.005	.36	4.7	28.	29.	?	3,600
7980	'' 18	'' 19	*	''	T. F.02	......	279 6	168.	111.6	24.	16.1	7.6	B.	4.3	11.3	7.7	3.6	.018	.272	.24	.032	.76	.292	.468	.005	.16	4.5	26.	26.	?	2,300
8075	Aug. 1	Aug. 2	*	Cons'd	M. F.02	...	574.4	127.6	446 8	56.	32.	21.	B.	3.3	18.2	8.7	9.5	.092	.528	.208	.32	1.1	.401	.896	.003	.68	6.5	29.	32.	+	8,000
8123	'' 8	'' 9	*	''	M. F.02	..	270.	145.6	121.4	58.	42.1	15 6	B.	3.8	16.2	11.1	5.1	.102	.416	.288	.128	.92	436	.484	.003	.4	4.6	31.	29.	+	6,000
8187	'' 15	'' 16	*	Little	T. F.02	......	227.6	149.6	78.	16.4	36.	10.4	B.	4.6	11.2	8.3	2.9	.098	.416	.208	.208	.76	.412	.318	.002	.21	....	....	29.	....	....
8269	'' 22	'' 21	*	Cons'd	M. F.1	......	896.8	126.	770.8	57.2	18.	39.2	B.	3.4	21 1	6.	15.4	.134	.8	.192	.608	1.326	.316	1.01	.002	.76	5.2	29.	30.	—	4,400
8326	'' 29	'' 30	*	''	M. F.2	....	382.	141.6	240.4	39.2	22.	17.2	B.	3.	15.7	7.1	8.3	.106	.48	.192	.288	.92	.236	.684	.002	.44	5.2	28.	30.	—	2,900
8377	Sept. 5	Sept. 6	§	Much	M.	......	336.8	160 4	176.4	31.6	21.2	10.4	DB.	3.	16.5	8.9	7 6	.078	.432	.304	.128	.76	.428	.332	.004	.36	6.	29.	30.	?	6,400

TURBIDITY * Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 68.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 FEET FROM MISSOURI SHORE, ALTON.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6624	Jan. 4	Jan. 5	*	Cons'd	M. F.03	......	262.8	244.4	18.4	27.2	16.	11.2	B.	13.	10.5	8.9	1.6	.42	.416	.224	.192	1.	.456	.544	01	.28	....	0.	4.	—	7.500
6661	" 10	" 11	*	"	M. F.08	......	222.	200.4	21.6	26.4	19.6	6.8	B.	5.2	12.9	10.8	2.1	.628	.464	.208	.256	.92	.448	.472	.003	.12	2.4	0.	0.	—	18.400
6702	" 17	" 18	†	"	M. F.05	......	197.2	190.8	6.4	28.	27.6	.4	B.	4.8	10.8	9.1	1.7	.036	.384	.176	.208	.8	.544	.256	.001	.16	1.4	0.	0.	—	16.000
6749	" 21	" 25	*	Much	M. F.2	......	327.6	174.4	153.2	44.	30.	14.0	B.	3.6	14.4	9.6	4.8	.048	.432	.192	.24	1.04	.512	.528	.008	.72	3.9	0.	10.	+	41.600
6815	Feb. 2	Feb. 3	*	Cons'd	M. F.1	......	276.4	234.	42.4	31.6	23.2	8.4	B.	9.2	12.	9.1	2.9	.74	.384	.256	.128	.768	.544	.224	.014	.88	....	0.	0.	—	9,600
6860	" 7	" 8	*	"	M. F.3	......	229.2	199.2	30.	38.4	12.8	25.6	B.	8.4	9.4	8.5	.9	.352	.336	.224	.112	.72	.544	.176	.008	.68	2.6	11.	10.	—	22,400
6902	" 14	" 17	§	V.M'ch	VM.F.06	......	617.6	146.4	471.2	32.4	22.8	9.6	B.	3.4	17.9	8.	9.9	.192	.96	.256	.704	1.92	.544	1.376	.011	.88	5.	0.	0.	+	168,000
6954	" 21	" 22	*	Much	M. F.2	......	496.	150.	346.	86.	21.2	64.8	B.	3.8	16.2	10.5	5.7	.352	.768	.256	.512	1.6	.768	.832	.015	.8	5.5	0.	0.	—	186 000
7004	Mar. 2	Mar. 3	*	Cons'd	M. F.4	......	213.2	174.	39.2	24.8	24.8	....	B.	4.4	13.7	11.5	2.2	.208	.336	.288	.048	.72	.64	.08	.01	1.08	3.4	0.	0.	—	40.000
7057	" 9	" 10	*	Much	M. F.5	......	814.	82.4	731.6	41.6	9 2	32.4	B.	1.	17.9	6.4	11.5	.176	.64	.192	.448	2.08	.32	1.76	.011	.8	10.	0.	9.	+	126.000
7089	" 14	" 15	§	V.M'ch	VM.F.6	......	1460.	83.2	1376.8	32.8	12.8	20.	B.	.8	23.	7.5	15.5	.224	1.184	.176	1.008	2.72	.384	2.336	.007	.8	17.	4.	6.	+	200.000
7135	" 21	" 22	*	Much	M. F.6	......	590.	130.4	459.6	30.4	14.8	15.6	B.	2.6	19.2	13.6	5.6	.416	.896	.32	.576	2.04	.952	1.088	.009	.68	14.1	0.	......	—	182,500
7176	" 28	" 29	*	"	M. F.5	......	500.	133.2	366,8	34.	14.8	19.2	B.	2.4	17.	9.6	7.4	.416	.608	.24	.368	1.368	.664	.704	.012	.56	11.5	6.	......	—	72,000
7237	April 4	April 5	*	"	M. F.20	......	359.2	139 2	220.	22.8	12.4	10.4	B.	3.4	14.1	7.4	6.7	.336	.416	.192	.224	.856	.568	.288	.011	.72	10.1	9.	10.	—	91,000
7300	" 13	" 14	*	"	M. F.25	......	676.8	129.2	547.6	57.2	17.6	39.6	B.	1.1	23.1	9.1	14.	.24	.896	.288	.608	2.2	.632	1.568	034	.92	11.4	8.	5.	—	164,000
7345	" 18	" 19	*	Cons'd	M. F 10	......	294.4	123.2	171.2	36.4	21.6	14.8	B.	3.8	12.9	7.6	5.3	.112	.32	.176	.144	.856	.536	.32	.02	.72	10 5	10.	10.	+	28.000
7413	" 25	" 26	*	Much	VM.F.30	......	886.	106.8	779.2	46.	18.8	27.2	B.	3.	23.4	7.9	15.5	.064	1.024	.192	.832	2.12	.472	1.648	025	.92	11 9	15.	25.	+	59,000
7457	May 2	May 3	*	Cons'd	M. F.05	......	474.8	136.8	338.	41 6	23.6	18.	B.	3.8	16.	7.9	8.1	.02	.496	.176	.32	1.06	.36	.7	.012	.64	10.1	20.	23.	+	26.000
7497	" 9	" 10	*	Much	M. F.5	......	599.6	103.2	496.4	43.2	19.2	24.	B.	2.8	18.5	12.9	5.6	.116	.592	.272	.32	1.124	.84	.284	.01	.4	11.4	19.	16.	+	52,000
7545	" 16	" 17	*	Cons'd	M. F.3	......	314.8	140.8	201.	30.8	22.	8.8	B.	3.3	20.6	10.2	10.4	.064	.416	.304	.112	1.284	.452	.832	.017	.32	8.8	24.	29.	+	15.500
7597	" 23	" 21	§	V.Me'h	M. F.2	......	645.6	147.6	498.	57.2	32.4	21.8	B.	2.9	19.8	7.9	11.9	.124	.56	.112	.448	1.22	.31	.88	.02	.4	8.4	19.	21.	+	22,500
7629	" 30	" 31	*	Much	M. F.05	......	392.8	219.6	173.2	48.4	39.2	9.2	B.	4.6	11.9	8.	3.9	.024	.4	.208	.192	1.12	.52	.6	.014	.8	7.2	24.	25.	+	4.400
7666	June 6	June 7	*	Cons'd	M. F.2	......	320.4	136.	184.4	29.2	22.8	6.4	B.	4.	13.3	8.5	4.8	.028	.4	.112	.288	.8	.154	.646	.011	.36	6.1	24.	26.	+	4.000
7718	" 13	" 14	*	"	M. F.04	......	246.	176.8	69.2	38.	28.4	9.6	B.	4.6	9.5	8.5	1.	.02	.288	.224	.064	1.22	.52	.7	.006	.2	5.2	24.	26.	+	6.000
7755	" 20	" 21	*	"	M. F.1	......	252.4	180.	72.4	26.4	25.6	.8	B.	4.	11.1	8.2	2.9	.04	.272	.144	.128	.58	.244	.336	.001	.04	5.3	23.	25.	....	5.500
7797	" 27	" 28	*	"	M. F.01	......	519.2	172.4	346.8	56.	36.4	19.6	B.	3.2	14.3	6.4	7.9	.084	.384	.176	.208	1.16	.548	.612	.014	.4	7.2	26.	28.	+	8.000
7831	July 4	July 5	*	Little	T. F.03	......	295.2	174.	121.2	34.8	28.8	6.	B.	4.2	11.7	7.5	4.2	.056	.256	.144	.112	.52	.308	.212	.0 4	.24	5.3	30.	28.	....	5.800
7902	" 11	" 12	*	"	T. F.05	......	295.2	192.8	102.4	40.	36.8	3.2	B.	4.2	9.2	7.3	1.9	.084	.272	.176	.096	.708	.244	.464	.004	.36	4.7	28.	29.	+	2.150
7978	" 18	" 19	*	"	T. F.02	......	242.	159.6	82.4	23.2	21.2	2.	B.	1.6	8.7	6.7	2.	.048	.224	.144	.08	.44	.292	.148	.005	.36	4.5	26.	26.	?	2.300
8074	Aug. 1	Aug. 2	*	Cons'd	M. F.02	......	624.8	131.6	493.2	48.	34.8	13.2	B.	2.8	17.7	8.1	9.6	.050	.608	16	.448	1.24	.452	.788	.004	.68	6.5	29.	32.	+	11.000
8123	" 8	" 9	*	"	M. F.02	......	270.	145.6	124.4	58.	42.4	15.6	B.	3.8	16.2	11.1	5.1	.102	.416	.288	.128	.92	.436	.484	.003	.4	4.6	31.	29.	?	14.900
8186	" 15	" 16	*	Little	T. F.02	......	210.4	137.2	73.2	36.	34.4	1.6	B.	3.4	12.	8.7	3.3	.086	.416	.16	.256	.76	.332	.428	.001	.12	3.	29.	29.	—	4,050
8270	" 22	" 24	*	Cons'd	M. F.1	......	820.4	128.	692.4	54.4	15.2	39.2	B.	3.4	19.9	6.1	13.8	.146	.72	.24	.48	1.08	.316	.764	.002	.76	5.2	29.	30.	—	4.200
8327	" 29	" 30	*	"	M. F.02	......	380.4	138.4	242.	44.	18.4	25.6	DB.	3.4	13.8	6.8	7.	.150	.48	.16	.32	.984	.252	.732	.001	.6	5.2	28.	30.	?	900
8376	Sept. 5	Sept. 6	§	Much	M.	......	361.2	168.8	192.4	27.2	20.8	6.4	DB.	3.2	17.	8.9	8.1	.072	.352	.304	.048	.92	.03	.89	.003	.4	6.	29.	30.	—	4,200
8448	" 12	" 13	*	"	M. F.15	......	279.2	149.6	129.6	39.6	18.	21.6	DB.	2.8	17.2	10.8	6.4	.078	.4	.24	.16	.792	.576	.216	.005	.32	4.9	27.	......	+	2,300
8502	" 19	" 20	*	Cons'd	M. F.4	......	267.2	152.4	114.8	32.	26.	6.	DB.	2.8	15.3	12.6	2.7	.120	.368	.208	.16	.888	.304	.584	.008	.56	4.	19.	......	—	6.800
8555	" 26	" 27	*	Much	M. F.6	......	315.2	147.2	168.	40.4	25.2	15.2	DB.	2.2	17.8	14.5	3.3	.16	.496	.224	.272	.952	.48	.472	.005	.36	....	....	......	....	....
8609	Oct. 3	Oct. 4	*	"	M. F.1	......	573.6	137.6	436.	48.4	29.6	18.8	......	2.	27.7	17.2	10.5	.124	.656	.24	.416	1.28	.576	.704	.001	.52	....	....	......	....	....

TURBIDITY—*Decided. §Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 FEET FROM ILLINOIS SHORE, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Suspnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6634	Jan. 5	Jan. 6	*	Cons'd	M. F.05	......	298.	273.2	24.8	38.4	34.8	3.6	B.	16.6	9.6	8.9	.7	1.14	.352	.192	.16	1.	.584	.416	.02	.72	2.2	0.	4.5	+	20,350
6669	" 11	" 12	*	"	M. F.03	......	302.8	241.6	61.2	27.2	20.4	6.8	B.	9.6	11.	8.8	2.2	.64	.448	.176	.272	.88	.64	.24	.013	.72	3.	0.	1.	....	83,850
6717	" 18	" 19	*	Much	M. F.04	......	252.8	212.8	40.	17.2	15.2	2.	B.	6.8	12.	8.4	3.6	.132	.384	.144	.14	1.04	.512	.528	.008	.64	2.6	3.	......	+	20,400
6769	" 26	" 27	*	"	M. F.03	......	374.	194.8	179.2	38.	19.2	18.8	B.	6.8	14.1	7.6	6.5	.42	.464	.272	.192	1.04	.48	.56	.017	1.04	5.6	1.	—1.	?	15,750
6868	Feb. 8	Feb. 9	*	"	M. F.03	......	1402.4	202.	1200.4	48.4	17.2	31.2	B.	9.1	19.7	9.6	10.1	.704	1.04	.256	.784	2.64	.576	2.064	.01	.88	2.7	2.	—4.	....	50,200
6969	" 23	" 24	§	V.M'ch	M. F.05	......	1350.4	160.	1190.4	49.6	23.6	26.	B.	5.8	23.	8.	15.	.448	1.024	.256	.768	2.72	.64	2.08	.012	1.64	8.	0.	4.5	+	176,000
7041	Mar. 8	Mar. 9	§	"	V.M.F.06	......	1469.6	149.6	1320.	30.	19.6	10.4	B.	4.8	18.8	6.9	11.9	.352	1.024	.208	.816	2.56	.48	2.08	.013	1.12	15.	1.	10.	+	194,500
7147	" 22	" 23	*	Much	M. F.06	......	822.	126.8	695.2	38.	12.8	25.2	B.	4.6	17.2	5.7	11.5	.256	.64	.224	.416	1.72	.536	1.184	.01	1.28	18.8	2.	13.	+	51,000
7194	" 29	" 30	*	"	M. F.05	......	572.8	150.4	422.4	22.8	7.2	15.6	B.	4.4	14.8	7.8	7.	.32	.448	.256	.192	.984	.536	.448	.014	1.28	15.	5.	7.	—	19,000
7252	April 5	April 6	*	"	M. F.10	......	401.2	153.6	247.6	25.6	16.4	9.2	B.	4.	12.9	6.4	6.5	.24	.32	.176	.144	.888	.472	.416	.022	1.52	14.2	7.	17.	—	26,000
7304	" 12	" 13	*	"	M. F.05	......	432.4	158.8	273.6	37.6	12.4	25.2	B.	4.8	14.2	6.9	7.3	.256	.448	.256	.192	1.24	.536	.704	.022	1.48	15.8	7.	2.	+	15,000
7351	" 19	" 20	*	"	M. F.07	......	330.8	184.4	146.4	26.8	23.2	3.6	B.	5.1	11.9	7.8	4.1	.096	.336	.192	.144	.92	.504	.416	.028	1.6	15.8	12.	22.	+	11,000
7425	" 26	" 27	*	"	M. F.15	......	488.8	166.8	322.	39.2	15.6	23.6	B.	4.8	16.8	7.3	9.5	.064	.576	.176	.4	1.64	.504	1.136	.04	1.52	17.2	15.	21.	+	18,000
7462	May 3	May 4	*	"	M. F.06	......	378.8	191.6	187.2	20.4	11.2	9.2	B.	6.1	13.3	7.8	5.5	.028	.48	.208	.272	1.22	.452	.768	.021	.96	15.3	18.	......	?	11,000
7506	" 10	" 11	*	"	M. F.20	......	487.2	172.8	314.1	49.2	32.4	16.8	B.	5.8	16.7	9.4	7.3	.064	.512	.16	.352	1.46	.26	1.2	.02	.72	16.3	17.	18.	+	21,500
7565	" 17	" 18	§	V.M'ch	M. F.1	......	1152.	222.	930.	12.4	31.2	11.2	B.	9.1	23.2	7.3	15.9	.081	.768	.16	.608	1.54	.356	1.184	.01	.4	15.	22.	23.	+	29,500
7608	" 24	" 25	§	"	V.M.F.2	......	700.1	206.4	491.	45.6	40.	5.6	B.	7.2	18.7	8.9	9.8	.014	.448	.16	.288	1.38	.452	.928	.018	.64	11.2	20.	27.	+	21,000
7639	" 31	June 1	§	"	M. F.01	......	1321.8	215.6	1079.2	64.	36.	28.	B.	8.	17.4	6.3	11.1	.024	.656	.16	.196	1.94	.388	1.552	.01	.68	13.2	23.	22.	+	23,000
7680	June 7	" 8	*	Much	M. F.03	......	908.1	220.8	687.6	44.1	29.6	14.8	B.	11.	16.4	6.4	10.	.024	.416	.112	.304	1.62	.308	1.312	.007	.6	12.4	25.	21.	+	8,000
7725	" 14	" 15	§	"	M. F.03	......	2756.4	222.4	2534.	71.6	24.4	47.2	B.	7.8	19.	6.5	12.5	.024	1.152	.16	.992	2.74	.234	2.506	.005	.54	10.7	24.	27.	+	19,500
7761	" 21	" 22	§	V.M'ch	V.M.F.05	......	1044.8	207.6	837.2	26.	8.4	17.6	B.	6.7	15.1	5.7	9.4	.048	.4	.16	.24	.81	.241	.596	.004	.48	11.2	25.	27.	..	13,000
7802	" 28	" 29	*	Cons'd	M. F.10	......	1228.	200.	1028.	73.2	42.	31.2	B.	6.4	18.2	5.6	12.6	.062	.8	.16	.64	1.1	.244	1.156	.008	.76	13.9	26.	32.	+	19,000
7843	July 5	July 6	*	"	M.	......	1430.	196.	1231.	46.8	20.	26.8	B.	6.2	17.7	8.9	8.8	.052	.48	.112	.368	1.4	.164	1.236	.003	.48	11.3	28.	......	+	11,000
7880	" 9	" 10	*	"	M. F.3	......	2159.6	193.2	1966.4	30.	26.8	3.2	B.	7.1	16.2	5.2	11.	.092	1.01	.128	.912	3.32	.18	3.14	.001	.48	10.8	....	......	....	25,000
7914	" 11	" 12	*	"	M. F.02	......	1508.1	182.8	1325.6	51.2	21.6	29.6	B.	6.8	17.5	8.5	9.	.1	.176	.128	.018	2.6	.18	2.42	.004	.6	10.6	....	......	....	30,500
7921	" 13	" 14	*	"	M. F.01	......	1473.2	192.	1281.2	50.8	8.4	42.4	B.	6.4	16.1	5.1	10.7	.084	.576	.08	.496	1.61	.214	1.396	.001	.48	10.3	....	......	....	32,000
7930	" 16	" 17	*	"	M. F.02	......	1144.8	195.6	949.2	34.	18.	16.	B.	7.8	15.	5.7	9.3	.052	.196	.176	.32	1.32	.404	.916	.001	.48	10.1	27.	......	....	22,000
7963	" 18	" 19	*	"	M. F.02	......	1305.6	193.2	1112.4	39.6	20.8	18.8	B.	7.4	15.6	5.	10.6	.072	.624	.144	.48	1.18	.292	1.188	.004	.44	9.7	25.	......	?	30,500
7988	" 20	" 21	*	"	M. F.02	......	804.4	191.2	613.2	56.8	32.8	24.	B.	7.4	15.4	6.9	8.5	.08	.528	.176	.352	.92	.26	.66	.006	.4	9.4	26.	......	—	57,000
7999	" 23	" 24	*	"	M. F.02	......	1610.	180.	1430.	56.	26.	30.	B.	5.5	15.5	4.5	11.	.076	.48	.064	.416	1.32	.276	1.044	.003	.56	9.1	26.	......	....	18,500
8026	" 25	" 26	*	"	M. F.02	......	2157.6	189.6	1968.	118.	31.6	86.4	B.	6.	24.4	7.9	16.5	.128	1.36	.096	1.264	2.84	.196	2.644	.005	.84	13.2	26.	......	+	50,000

TURBIDITY * Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 69—Concluded.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 FEET FROM ILLINOIS SHORE, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Susp'nd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Susp'nd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
8040	July 27	July 28	*	Cons'd	M. F.05	......	1020.8	155.6	865.2	46.4	21.	22.4	B.	6.6	21.9	7.9	14.	.02	.896	.144	.752	1.64	.276	1.364	.002	.8	12.8	26.	......	+	16,000
8051	" 30	" 31	*	"	M. F.01	......	576.2	155.2	412.	59.6	36.	23.6	B.	6.4	14.8	7.2	7.6	.06	.512	.144	.368	1.24	.308	.932	.004	.68	12.2	26.	......	+	8,000
8077	Aug. 1	Aug. 2	*	"	M. F.02	......	592.4	148.8	443.6	55.6	31.6	24.	B.	6.4	16.7	8.	8.7	.112	.608	.176	.432	1.24	.404	.836	.003	.76	11.7	27.	......	+	7,500
8092	" 3	" 4	*	"	M. F.02	......	578.3	171.6	406.7	75.5	41.8	30.7	B.	6.8	16.4	7.4	9.	.06	.48	.224	.256	.68	.388	.292	.003	.6	10.9	29.	......	+	6.000
8101	" 6	" 7	*	"	M. F.02	......	332.2	156.	177.2	36.	25.2	10.8	B.	6.6	12.4	11.5	.9	.069	.304	.224	.08	.92	.468	.452	.004	.6	9.8	29.	......	?	5.000
8117	" 8	" 9	*	"	M. F.01	......	330.8	176.8	154.	54.	43.2	10.8	B.	7.4	13.5	8.8	14.7	.1	.352	.288	.064	1.	.34	.66	.005	.52	8.4	29.	......	—	7,000
8150	" 10	" 11	*	"	M.	......	303.6	162.8	140.8	57.2	37.6	19.6	B.	7.	14.7	8.3	6.4	.06	.448	.272	.176	1.48	.348	1.132	.005	.44	7.4	29.	......	....	16,000
8161	" 13	" 14	*	Little	T. F.01	.. ...	289.2	156.4	132.8	50.8	50.8	37.6	B.	7.4	12.2	7.6	4.6	.072	.352	.24	.112	1.	.38	.62	.007	.52	6.1	28.	......	—	8,000
8184	" 15	" 16	*	"	T. F.01	......	332.4	172.	160.4	38.8	35.6	3.2	B.	8.	11.5	6.8	4.7	.104	.416	.16	.256	.76	.396	.364	.006	.36	5.6	28.	......	—	10,000
8198	" 17	" 18	*	"	T. F.02	......	262.8	163.6	99.2	35.6	28.8	6.8	B.	8.	10.4	6.7	3.7	.12	.416	.24	.176	1.08	.3	.78	.007	.44	5.1	29.	......	+	1.100
8223	" 20	" 21	*	"	F.01	......	350.4	191.2	159.2	18.	14.8	3.2	B.	8.8	10.6	6.8	3.8	.112	.544	.224	.32	1.	.3	.7	.008	.36	5.2	29.5	......	+	1,800
8260	" 22	" 23	*	Cons'd	M. F.	.....	692.8	150.8	542.	46.8	22.	24.8	B.	6.6	17.3	6.3	11.	.144	.8	.208	.592	1.48	.236	1.244	.004	.8	8.9	29.	......	....	....
8279	" 24	" 25	*	"	M. F.1	......	802.4	149.2	653.2	138.	20.	118.	B.	5.6	19.	6.1	12.9	.14	.608	.224	.484	1.16	.3	.86	.001	.68	9.1	28.	......	....	2,900
8302	" 27	" 28	*	"	M. F.03	......	521.2	145.2	376.	35.2	21.6	13.6	B.	6.	11.8	5.9	8.9	.104	.48	.096	.384	1.4	.332	1.062	.004	.92	8.9	26.	......	+	3.000
8321	" 29	" 30	*	"	M. F.	......	454.4	162.8	292.	34.	16.4	17.6	B.	7.4	12.8	6.4	6.4	.136	.448	.16	.288	.84	.316	.524	.002	.72	8.9	26.	......	+	1,800
8345	" 31	Sept. 1	*	Much	M. F.1	......	560.	171.4	385.6	27.2	23.2	4.	DB.	7.8	15.9	5.8	10.1	.068	.448	.208	.24	.92	.332	.588	.001	.6	8.7	27.	......	—	1,800
8352	Sept. 3	" 4	§	V.M'ch	M. F.15	......	452.4	158.	394.4	31.2	30.	1.2	B.	6.6	16.9	7.8	9.1	.132	.48	.128	.352	.824	.428	.396	.006	.68	10.1	26.	......	+	3,750
8384	" 5	" 6	§	"	M. F.05	......	386.4	188.4	198.	37.2	19.6	17.6	DB.	7.6	13.7	7.2	6.5	.118	.352	.224	.128	.661	.432	.232	.003	.4	10.	27.	......	+	3.600
8413	" 7	" 8	*	Much	M. F.1	......	454.8	167.6	287.2	32.8	11.2	21.6	DB.	10.	15.9	6.9	9.	.13	.48	.208	.272	.664	.416	.248	.004	.6	10.4	27.	......	+	1,500
8424	" 10	" 11	*	"	M. F.15	......	329.6	175.2	154.4	32.4	18.8	13.6	B.	7.4	13.2	7.3	5.9	.128	.416	.24	.176	.92	.512	.408	.006	.76	8.6	27.	......	—	2,550
8443	" 12	" 13	*	"	M. F.3	......	362.	176.8	185.2	26.	24.	2.	DB.	6.8	15.1	8.8	6.3	.114	.512	.224	.288	.856	.576	.28	.008	.52	7.8	26.	......	+	1,450
8465	" 14	" 15	§	"	M. F.2	......	320.4	186.	134.4	31.6	24.4	7.2	DB.	7.2	16.2	9.2	7.	.144	.368	.16	.208	.696	.384	.312	.001	.64	7.1	24.	......	+	1,400
8483	" 17	" 18	§	V.M'ch	M. F.02	......	339.2	177.6	161.6	60.	28.4	31.6	B.	6.4	14.1	9.6	4.5	.142	.416	.192	.224	.6	.464	.136	.007	.52	6.1	20.	......	—	5,400
8497	" 19	" 20	*	Cons'd	M. F.03	......	312.8	173.2	139.6	40.8	24.	16.8	DB.	6.	13.9	9.3	4.6	.08	.384	.176	.208	.668	.384	.284	.013	.52	6.	18.	......	—	3.350
8517	" 21	" 22	*	"	M. F.3	......	315.6	178.8	136.8	28.4	23.2	5.2	B.	5.8	13.8	9.8	4.	.074	.352	.256	.096	.792	.464	.328	.007	.52	6.2	19.	......	+	3,800
8524	" 24	" 25	§	Much	VM.F.35	......	795.6	198.8	596.8	54.4	32.8	21.6	DB.	6.8	17.5	10.9	6.6	.104	.416	.208	.208	1.08	.652	.428	.003	.48	7.5	20.	......	+	9.600
8551	" 26	" 27	*	"	M.	......	383.2	164.	219.2	57.2	30.8	26.4	B.	5.4	16.9	13.	3.9	.17	.448	.192	.246	.952	.544	.408	.005	.6	7.6	22.	......	+	5,100
8569	" 28	" 29	*	Cons'd	M.	......	390.8	154.4	236.4	49.2	22.8	26.4	DB.	4.8	18.3	13.1	5.2	.1	.576	.272	.304	.724	.572	.152	.008	.44	8.	20.	......	+	10,800
8581	Oct. 1	Oct. 2	*	"	M. F.1	......	414.	140.4	273.6	40.	26.8	13.2	DB.	4.	22.1	17.3	4.8	.112	.432	.4	.032	1.024	.592	.432	.008	.52	10.	19.	......	—	1.300
8618	" 4	" 5	§	Much	M. F.1	......	502.4	139.6	362.8	43.6	32.4	11.2	DB.	3.6	24.8	17.8	7.	.126	.608	.352	.256	.....	.592	.....	.001	.6	..	....	......	+	3.200
....	....	....	..	....	....	......	......	.....	.....	....	....	....	......	.....	....	....	....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	......	....	....

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE. 76.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, AT CHAIN OF ROCKS PUMPING STATION ST. LOUIS WATER WORKS.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of: 1900 Collection.	1900 Examination.	Appearance: Turb'y.	Sediment.	Color.	Odor.	Residue on Evaporation: Total.	Dissolved.	Suspended.	Loss on Ig'n: Tot'l	Dis-solv'd	Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	By Dissolved.	By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Dis-solv'd	Sus-pnd'd	Organic Nitrogen: Total.	Dissolved.	Suspended.	Nitrogen as: Nitrites.	Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6633	Jan. 5	Jan. 6	*	Cons'd	M. F.03	......	330.	303.6	26.4	24.	17.2	6.8	B.	22.	9.3	6.5	2.8	.304	.256	.176	.08	.84	.52	.32	.012	.32	2.2	0.	4.5	—	13.000
6670	" 11	" 12	*	"	M. F.02	......	412.4	408.	34.4	20.8	18.4	2.4	B.	21.7	8.	6.2	1.8	.068	.272	.128	.144	.64	.32	.32	.007	.44	3.	0.	1.	+	13.500
6716	" 18	" 19	*	Much	M. F.03	......	616.8	335.2	281.6	18.8	7.2	11.6	B.	21.7	10.6	5.3	5.3	.08	.288	.096	.192	.8	.416	.384	.004	.24	2.6	3.	1.	+	192.000
6767	" 26	" 27	*	"	M. F.02	......	585.2	298.4	286.8	24.4	14.8	9.6	B.	20.2	10.2	5.3	4.9	.06	.352	.144	.208	.96	.224	.736	.008	.68	5.6	1.	-1.	+	31.800
6867	Feb. 8	Feb. 9	§	"	M. F.03	......	1663.6	219.2	1444.4	62.	22.4	39.6	B.	11.	19.6	7.9	11.7	.432	.96	.16	.8	2.64	.18	2.16	.009	.96	2.7	1.	-4.	....	66.800
6962	" 23	" 24	§	"	M. F.04	......	891.6	183.2	708.4	41.6	28.	13.6	B.	9.8	18.6	7.4	11.2	.224	.8	.224	.576	2.08	.512	1.568	.01	.8	8.	0.	4.5	+	123.500
7038	Mar. 8	Mar. 9	§	V. M'ch	V.M.F.03	......	1210.	145.2	1094.8	64.8	18.4	46.4	B.	5.	26.3	7.8	18.5	.256	1.44	.176	1.264	3.68	.64	3.04	.012	1.04	15.	1.	10.	+	103.000
7145	" 22	" 23	*	Much	M. F.4	......	782.4	111.6	670.8	34.4	11.6	22.8	B.	4.	20.	7.4	12.6	.32	.672	.24	.432	2.04	.6	1.44	.014	.92	18.8	2.	13.	-	129.000
7195	" 29	" 30	*	"	M. F.01	......	438.8	118.4	320.4	26.4	10.8	15.6	B.	4.2	15.2	6.8	8.4	.352	.48	.272	.208	1.304	.6	.704	.012	.96	15.	5	7.	—	59.000
7250	Apr. 5	Apr. 6	*	"	M. F.03	......	493.6	141.6	352.	24.	16.4	7.6	B.	4.2	16.2	7.1	9.1	.272	.512	.176	.336	1.24	.504	.736	.02	.84	14.2	7	17	—	97.000
7302	" 12	" 13	*	"	M. F.40	......	732.1	182.4	550	43.6	18.	25.6	B.	3.8	21.2	9.4	11.8	.16	.904	.288	.616	2.12	.824	1.296	.03	.6	15.8	7.	2.	+	69.000
7353	" 19	" 20	*	"	M. F.07	......	1001.	188.4	815.6	31.6	18.4	13.2	B.	5.8	16.1	7.5	8.6	.08	.512	.176	.336	1.16	.44	.72	.018	.8	15.8	12.	22.	+	29.000
7426	" 26	" 27	*	"	M. F.30	......	1017.2	154.	863.2	12.4	32.	10.4	B.	1.4	19.1	7.3	11.8	.061	.736	.192	.544	1.96	.44	1.52	.02	1.52	17.2	15.	24.	+	45.500
7461	May 3	May 4	*	"	M. F.06	......	837.2	163.6	673.6	27.6	19.6	8.	B.	5.6	17.5	7.	10.5	.008	.64	.192	.448	1.62	.388	1.232	.009	.72	15.3	18.	.....	+	32.500
7503	" 10	" 11	*	"	M. F.50	......	791.2	172.	619.2	31.2	29.6	1.6	B.	5.2	19.3	12.5	6.8	.048	.752	.192	.56	1.51	.32	1.22	.01	.48	16.3	17.	18	+	24.500
7596	" 17	" 18	§	V. M'ch	M. F.1	......	1229.2	212.8	1016.4	56.	22.8	33.2	B.	9.	18.8	7.2	11.6	.03	.8	.16	.64	1.54	.324	1.216	.01	.44	15.	22.	23.	+	33.000
7606	" 24	" 25	§	"	M. F.2	......	1301.6	206.	1095.6	61.2	26.	35.2	B.	6.8	18.7	8.5	10.2	.052	.752	.176	.576	2.18	.42	1.76	.008	.6	14.2	20.	27.	?	53.000
7642	" 31	June 1	*	Much	M. F.05	......	1769.2	258.8	1510.4	61.2	30.8	30.4	B.	8.8	17.9	6.3	11.6	.028	.736	.16	.576	2.02	.292	1.728	.011	.72	13.2	23.	22	+	28.000
7679	June 7	" 8	*	"	M. F.03	......	1281.6	226.4	1055.2	61.6	31.2	30.4	B.	8.2	17.3	6.1	11.2	.016	.608	.112	.496	1.78	.308	1.472	.007	.56	12.4	25.	24	+	9.000
7726	" 14	" 15	§	"	M. F.03	......	3680.4	238.	3442.4	67.2	23.6	43.6	B.	7.8	19.5	5.6	13.9	.028	1.088	.112	.976	3.22	.74	2.48	.005	.52	10.7	24.	27	+	37.000
7761	" 21	" 22	§	V. M'ch	V.M.F.05	......	1602.4	226.8	1375.6	52.4	10.8	41.6	B.	7.2	17.3	5.9	11.4	.032	.56	.08	.48	1.32	.214	1.076	.003	.44	11.2	25.	27.	...	20.000
7803	" 28	" 29	*	Cons'd	M. F.10	......	2100.4	198.8	1901.6	82.8	30.	52.8	B.	6.1	18.4	5.9	12.5	.122	1.2	.176	1.024	2.92	.244	2.676	.005	.68	13.9	26.	32.	+	20.500
7842	July 5	July 6	*	"	M. F.03	......	2418.8	196.8	2222.	76.8	20.8	56.	B.	6.4	22.4	6.6	15.8	.06	.96	.112	.848	2.68	.516	2.164	.001	.56	11.3	28.	......	?	13.500
7881	" 9	" 10	*	"	M. F.02	......	2776.4	196.4	2580.	68.	16.4	51.6	B.	8.	24.	4.7	19.3	.13	1.2	.144	1.056	2.44	.228	2.212	.001	.64	10.8	27.	......	....	20.000
7912	" 11	" 12	*	"	M. F.03	......	2011.6	177.6	1864.	62.4	13.6	48.8	B.	7.	18.5	7.4	11.1	.1	.176	.112	.064	2.44	.372	2.068	.003	.6	10.6	27.	......	....	25.000
7922	" 13	" 14	*	"	M. F.01	......	1725.6	190.4	1535.2	88.4	35.2	53.2	B.	6.8	16.7	4.2	12.5	.068	.576	.08	.496	1.72	.272	1.448	.001	.52	10.3	26.	......	....	24.000
7928	" 16	" 17	*	"	M. F.02	......	1681.6	189.2	1492.4	11.2	14.8	26.4	B.	7.2	16.3	5.2	11.1	.076	.592	.144	.448	1.8	.18	1.62	.004	.44	10.1	27.	......	—	38.000
7962	" 18	" 19	*	"	M. F.01	......	1512.4	198.4	1314.	57.2	21.6	35.6	B.	9.4	16.	4.2	11.8	.092	.672	.128	.544	1.4	.196	1.204	.004	.44	9.7	25.	......	-	12.000
7991	" 20	" 21	*	"	M. F.02	......	1351.2	178.	1176.2	58.8	23.2	35.6	B.	8.2	17.5	5.3	12.2	.06	1.088	.176	.912	1.64	.212	1.428	.002	.4	9.4	26.	......	+	61.000
7998	" 23	" 24	*	"	M. F.01	......	1817.2	188.	1629.2	41.6	31.2	10.4	B.	5.8	16.1	4.6	11.8	.072	.608	.064	.544	1.64	.292	1.348	.003	.68	9.1	26.	......	....	12.000
8029	" 25	" 26	*	"	M. F.01	......	2605.2	239.6	2365.6	104.	43.2	60.8	B.	6.6	27.8	6.6	21.2	.112	1.36	.112	1.248	1.64	.244	1.396	.005	.8	13.2	26.	......	..	32.000
8039	" 27	" 28	*	"	M. F.05	......	1537.2	152.8	1384.4	80.	32.	48.	B.	7.2	19.6	8.2	11.4	.056	1.024	.24	.784	2.44	.136	2.004	.002	.68	12.8	26.	......	—	23.500

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 70—Concluded.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, AT CHAIN OF ROCKS.
PUMPING STATION ST. LOUIS WATER WORKS.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of: 1900 Collection.	1900 Examination.	Appearance: Turb'y.	Sediment.	Color.	Odor.	Residue on Evaporation: Total.	Dissolved.	Suspended.	Loss on Ign.: Tot'l	Dis-solv'd	Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	By Dissolved.	By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Dis-solv'd	Sus-pnd'd	Organic Nitrogen: Total.	Dissolved.	Suspended.	Nitrogen as: Nitrites.	Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
8053	July 30	July 31	*	Cons'd	M. F.02	.. ...	1062.1	148.	914.4	62.	33.2	28.8	B.	4.8	21.7	6.5	15.2	.044	.736	.176	.56	1.64	.348	1.292	.004	.68	12.2	26.	.....	+	6,000
8079	Aug. 1	Aug. 2	*	"	M. F.02	......	836.8	149.6	687.2	61.2	30.8	30.4	B.	5.4	20.2	6.9	13.3	.072	.688	.192	.496	2.04	.416	1.624	.003	.68	11.7	27.	.....	+	15,000
8089	" 3	" 4	*	"	M. F.02	......	697.6	151.6	546.	74.4	26.	68.4	B.	4.8	18.7	7.5	11.2	.076	.608	.176	.432	1.32	.324	.996	.001	.6	10.9	29.	.....	+	10,000
8099	" 6	" 7	*	"	M. F.02	......	506.	161.6	344.4	42.	37.6	14.4	B.	5.2	15.1	11.	4.1	.10	.512	.24	.272	.92	.452	.468	.001	.41	9.8	29.	.....	+	4,000
8116	" 8	" 9	*	"	M. F.02	......	538.8	161.2	377.6	62.8	29.6	33.2	B.	6.6	16.	9.	7.	.108	.448	.272	.176	1.24	.452	.788	.001	.44	8.4	29.	.....		18,000
8149	" 10	" 11	*	"	M.	......	500.	168.8	331.2	45.2	26.4	18.8	B.	5.8	15.7	7.9	7.8	.014	.544	.24	.304	1.	.324	.676	.001	.44	7.4	29.	.....	+	16,000
8159	" 13	" 14	*	"	M.	......	552.8	199.2	353.6	55.6	33.6	22.	B.	6.6	13.4	6.9	6.5	.096	.544	.176	.368	1.08	.38	.7	.003	.41	6.1	28.	.....		6,000
8183	" 15	" 16	*	Little	T.	......	517.6	189.6	328.	54.4	36.4	18.	B.	3.8	12.1	7.	5.1	.1	.416	.112	.301	.76	.332	.428	.004	.2	5.6	28.	.....		6,000
8196	" 17	" 18	*	"	T. F.01	......	388.4	178.4	210.	45.6	24.	21.6	B.	7.8	11.	6.9	4.1	.132	.544	.176	.368	.808	.316	.492	.003	36	5.1	29.	.....		2,000
8224	" 20	" 21	*	Cons'd	M. F.01	......	819.2	214.4	604.8	41.6	17.6	24.	B.	9.2	12.7	6.3	6.4	.116	.418	.288	.16	1.16	.3	.86	.003	.36	5.2	29.5	.....		1,800
8263	" 22	" 23	*	"	M. F.05	......	839.	134.4	704.6	48.4	23.6	21.8	B.	4.2	18.8	6.2	12.6	.136	.8	.192	.608	1.18	.46	1.02	.003	.76	8.9	29	.....		1,500
8278	" 24	" 25	*	"	M. F.2	......	801.	130.8	673.2	70.	18.8	51.2	B.	4.8	20.4	6.	14.4	.152	.736	.192	.541	1.336	.22	1.116	.001	.52	9.1	28.	.....	+	2,850
8300	" ..	" 28	*	Little	M. F.02	......	785.6	158.	627.6	40.	12.8	27.2	B.	8.6	18.4	5.7	12.7	.08	.48	.16	.32	1.48	.188	1.292	.002	.68	8.9	26.	.....		2,150
8322	" 29	" 30	*	Cons'd	M. F.02	......	774.4	146.	628.4	42.4	14.8	27.6	B.	9.2	17.2	6.	11.2	.14	.64	.112	.528	1.16	.392	.768	.001	.6	8.9	26.	.....		1,900
8344	" 31	Sept. 1	*	Much	M. F.05	......	852.	173.6	678.4	38.4	27.2	11.2	DB.	9.	18.3	5.9	12.4	.088	.592	.208	.384	1.48	.268	1.212	.001	.6	8.7	27.	.....	+	1,700
8353	Sept. 3	" 4	§	V.M'ch	M. F.18	.....	718.4	138.8	579.6	36.4	25.6	10.8	DB.	11.	20.8	7.4	13.4	.124	.608	.112	.496	1.08	.028	.98	.001	.14	10.1	26.	.....	+	1,150
8383	" 5	" 6	§	"	M. F.05	......	765.2	180.8	581.4	46.	16.4	39.6	DB.	10.3	21.5	7.1	14.4	.112	.592	.128	.464	1.176	.416	.76	.001	.6	10.	27.	.....		7,300
8412	" 7	" 8	*	Much	M. F.15	......	785.6	171.2	614.4	40.4	18.4	22.	DB.	9.	17.4	6.7	10.7	.156	.768	.256	.512	1.08	.....	.....	.002	.6	10.4	27.	.....	+	19,400
8423	" 10	" 11	*	"	M. F.2	......	606.8	169.2	437.6	39.6	14.8	24.8	DB.	6.8	18.3	7.4	10.9	.144	.448	.256	.192	1.148	.512	.636	.004	.6	8.6	27.	.....		1,600
8446	" 12	" 13	*	"	M. F.3	... ..	604.4	185.6	418.8	37.6	31.6	6.	DB.	8.	16.7	8.6	8.1	.116	.544	.208	.336	1.208	.416	.792	.004	.5	7.8	26.	.....		2,100
8168	" 11	" 15	§	V.M'ch	VM.F.03	......	513.6	176.4	337.2	36.	18.	18.	DB.	5.8	20.6	11.9	8.7	.188	.148	.336	.112	.984	.352	.632	.003	.44	7.1	21.	.....	+	2,200
8481	" 17	" 18	§	Much	M. F.05	......	473.2	182.	291.2	52.8	23.6	29.2	DB.	5.6	17.	9.4	7.6	.068	.48	.208	.272	.696	.384	.312	.007	.24	6.1	20.	.....		2,100
8498	" 19	" 20	*	"	M. F.02	......	442.8	188.	254.8	43.6	26.	17.6	DB.	6.4	16.2	9.	7.2	.062	.4	.16	.24	.76	.336	.424	.006	.52	6.	18.	.....		8,800
8516	" 21	" 22	*	"	M. F.2	......	902.4	223.2	679.2	25.6	22.	3.6	B.	8.2	17.	10.3	6.7	.07	.48	.176	.301	1.24	.416	.824	.002	.52	6.2	19.	.....	+	60,000
8525	" 24	" 25	§	"	VM.F.35	......	1306.4	229.6	1076.8	59.2	32.8	26.4	DB.	8.4	18.7	9.9	8.8	.1	.64	.128	.512	1.56	.432	1.128	.003	.72	7.5	20.	.....	+	9,800
8550	" 26	" 27	§	"	M.	......	825.2	195.2	630.	50.4	26.8	23.6	DB.	11.	21.6	11.7	9.9	.082	.768	.16	.608	1.4	.132	.968	.001	.56	7.6	22.	.....	+	29,100
8571	" 28	" 29	*	Cons'd	M.	......	543.6	163.2	380.4	50.8	26.	24.8	DB.	5.	21.8	12.1	12.7	.148	.576	.272	.304	1.184	.62	.564	.005	.56	8.	20.	.....		12,600
8582	Oct. 1	Oct. 2	§	Much	M. F.8	......	602.4	150.1	452.	54.	31.2	22.8	DB.	4.8	22.3	16.8	5.5	.12	.512	.324	.188	1.264	.528	.736	.005	.52	10.	19.	.....		2,550
8617	" 4	" 5	§	"	M. F. T.	......	1145.6	170.8	974.8	56.	28.8	27.2	DB.	5.	24.7	12.6	12.1	.212	1.024	.304	.72	2.144	.608	1.536	.001	.52	....	....	.....	+	3,400

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight.] Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 71.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, AT CHAIN OF ROCKS, INLET TOWER, ST. LOUIS WATER WORKS.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue. Dissolved.	Residue. Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	By Dissolved.	By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Dis-solved.	Sus-pended.	Nitrogen as Nitrites.	Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6636	Jan. 5	Jan. 6	*	Cons'd	M. F.04	......	367.2	342.8	21.4	18.8	16.8	2.	B.	24.	6.5	5.5	1.	.144	.208	.144	.064	.84	.52	.32	.008	.36	2.2	0.	4.5	|	15,800
6667	" 11	" 12	*	"	M. F.01	......	454.8	334.4	120.4	19.6	16.4	3.2	B.	23.5	7.	5.5	1.5	.044	.288	.16	.128	.72	.32	.4	.009	.48	3.	0.	1.	—	35,100
6715	" 18	" 19	*	Much	M. F.02	......	619.6	362.8	286.8	51.2	17.2	34.	B.	28.4	8.1	5.2	2.9	.088	.288	.128	.16	.8	.256	.544	.005	.28	2.6	3.	......	‡	216,000
6768	" 26	" 27	*	"	M. F.01	......	653.6	302.4	351.2	21.2	14.4	6.8	B.	21.4	9.9	4.9	5.	.056	.264	.096	.168	.96	.224	.736	.007	.61	5.6	1.	1.	+	39,200
6870	Feb. 8	Feb. 9	§	"	M. F.01	......	1830.	210.8	1589.2	52.8	18.	31.8	B.	12.6	19.4	5.2	14.2	.32	.88	.208	.672	2.08	.....	.....	.008	.68	2.7	1.	−4.	....	48,600
6971	" 23	" 24	§	"	M. F.04	......	1015.2	220.	795.2	50.8	36.	14.8	B.	12.2	17.2	6.9	10.3	.192	.576	.24	.336	1.68	.512	1.168	.008	1.01	8.	0.	4.5	+	85,000
7039	Mar. 8	Mar. 9	§	V. M'ch	VM. F.03	......	2604.4	137.2	2467.2	78.4	10.	68.4	B.	5.2	27.2	6.3	20.9	.288	1.44	.192	1.248	3.84	.48	3.36	.015	1.01	15.	1.	10.	+	160,500
7116	" 22	" 23	*	Much	M. F.06	......	957.6	123.2	831.4	21.2	8.	13.2	B.	5.	22.	6.6	15.4	.32	.96	.256	.704	2.36	.6	1.76	.013	.41	18.8	2.	13.	|	142,500
7196	" 29	" 30	*	"	M. F.06	......	511.6	126.	385.6	25.6	9.6	16.	B.	5.	16.4	6.9	9.5	.288	.512	.224	.288	1.368	.536	.832	.014	.56	15.	5.	7.	+	73,500
7249	Apr. 5	Apr. 6	*	"	M. F.03	......	718.	182.	566	35.2	10.	25.2	B.	6.6	16.1	7.	9.4	.24	.196	.192	.304	1.368	.536	.832	.018	.72	14.2	7.	17.	—	80,000
7301	" 12	" 13	*	"	M. F.06	......	1042.8	179.6	863.2	31.2	12.	19.2	B.	6.2	18.9	7.5	11.4	.176	.96	.256	.704	2.12	.472	1.648	.027	.96	15.8	7.	2.	+	81,000
7352	" 19	" 20	*	"	M. F.05	......	1381.6	201.6	1180.	14.8	17.6	27.2	B.	6.4	17.8	8.8	9.	.018	.544	.176	.368	1.4	.44	.96	.012	.36	15.8	12.	22.	|	39,000
7427	" 26	" 27	*	"	M. F.25	......	1474.8	171.8	1300.	138.	26.	112.	B.	6.6	18.4	6.4	12.	.061	.8	.128	.672	2.12	.376	1.744	.018	.88	17.2	15.	21.	+	33,500
7460	May 3	May 4	*	"	M. F.40	......	1371.6	220.	1151.6	60.	25.2	34.8	B.	8.	18.6	6.6	11.5	.016	.912	.144	.768	2.1	.36	1.74	.006	.8	15.3	18.	......	+	46,000
7504	" 10	" 11	*	"	M. F.07	......	1256.	198.	1058.	37.	20.	17.	B.	9.2	19.6	8.7	10.9	.018	.928	.144	.784	2.18	.28	1.9	.006	.68	16.3	17.	18.	+	27,000
7567	" 17	" 18	§	V. M'ch	M. F.08	......	1829.6	243.2	1586.4	64.	24.8	39.2	B.	12.2	26.2	7.2	19.	.036	1.44	.096	1.344	2.02	.324	1.696	.01	.41	15.	22.	23.	+	23,000
7607	" 24	" 25	§	"	VM. F.1	......	2031.4	255.2	1779.2	62.4	31.2	31.2	B.	9.4	23.7	7.2	16.5	.1	.592	.16	.432	1.26	.226	4.034	.001	.61	14.2	20.	27.	‡	32,500
7641	" 31	June 1	§	Much	M. F.05	......	2069.6	286.8	1782.8	81.2	29.6	51.6	B.	9.6	18.5	5.7	12.8	.061	.88	.144	.736	2.9	.324	2.576	.01	.68	13.2	23.	22.	+	28,000
7677	June 7	" 8	*	"	M. F.03	......	1820.4	212.8	1577.6	68.8	20.8	18.	B.	11.4	18.3	5.5	12.8	.016	.768	.096	.672	1.94	.308	1.632	.004	.48	12.4	25.	24.	—	27,000
7727	" 14	" 15	*	"	M. F.04	......	4014.4	224.8	3789.6	63.2	16.8	16.4	B.	8.4	23.5	6.1	17.1	.028	1.344	.176	1.168	3.46	.42	3.04	.005	.52	10.7	24.	27.	....	12,000
7762	" 21	" 23	§	V. M'ch	VM. F.05	......	2124.	213.6	1880.4	46.8	28.4	18.4	B.	7.8	17.8	5.2	12.6	.018	.56	.128	.432	2.12	.196	1.924	.003	.4	11.2	25.	27.	....	20,500
7805	" 28	" 29	*	Cons'd	M. F.10	......	3130.4	211.6	2918.8	117.6	42.	75.6	B.	7.	24.5	5.5	19.	.14	1.36	.176	1.184	2.92	.212	2.708	.003	.6	13.9	26.	32.	...	35,500
7841	July 5	July 6	*	"	M. F.03	......	2716.4	196.4	2550.	75.6	21.2	51.4	B.	6.6	21.	5.	19.	.08	1.01	.096	.914	3.56	.148	3.412	.003	.6	11.3	28.	......	—	23,500
7879	" 9	" 10	*	"	M. F.03	......	3081.6	204.4	2877.2	76.4	14.	62.4	B.	8.8	27.5	4.8	22.7	.152	1.52	.144	1.376	3.88	.18	3.7	.001	.64	10.8	27.	......	....	33,000
7913	" 11	" 12	*	"	M. F.03	......	2704.4	180.	2521.4	60.	18.1	41.6	B.	7.4	22.6	8.1	11.5	.1	.176	.096	.08	2.68	.116	2.564	.002	.6	10.6	27.	......	...	74,000
7919	" 13	" 14	*	"	M. F.02	......	2345.2	188.	2157.2	76.8	26.8	50.	B.	8.6	18.3	7.	11.3	.068	.864	.08	.784	1.72	.244	1.476	.001	.52	10.3	26.	......	....	26,000
7929	" 16	" 17	*	"	M. F.02	......	2294.4	201.6	2092.8	16.8	22.	21.8	B.	7.8	17.6	4.9	12.7	.1	.608	.064	.544	1.96	.1	1.86	.004	.14	10.1	27.	......	....	....
7965	" 18	" 19	*	"	M. F.01	......	2321.2	192.8	2128.4	74.8	16.4	58.1	B.	9.2	17.9	4.3	13.6	.081	.864	.128	.736	2.12	.18	1.91	.004	.36	9.7	27.	......	....	....
7990	" 20	" 21	*	"	M. F.02	......	1997.2	194.8	1802.4	82.8	20.	62.8	B.	9.8	19.3	5.1	14.2	.116	.864	.176	.688	1.96	.212	1.748	.001	.28	9.4	26.	......	+	20,500
8000	" 23	" 24	*	"	M. F.02	......	2376.8	194.	2182.8	50.8	19.	31.8	B.	6.8	18.3	4.3	11.	.068	.864	.064	.8	1.8	.1	1.7	.002	.68	9.1	26.	......	...	15,500
8027	" 25	" 26	*	"	M. F.01	......	3296.	267.2	3028.8	153.2	21.2	132.	B.	7.2	29.1	7.1	22.	.156	1.52	.144	1.376	2.28	.372	1.908	.005	.88	13.2	26.	......	....	....

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 71—Concluded.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER, T. J. BURRILL, University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, AT CHAIN OF ROCKS, INLET TOWER, ST. LOUIS WATER WORKS.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dissolv'd	Loss on Ig'n: Susp'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Susp'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
8041	July 27	July 28	*	Cons'd	M. F.02	......	2407.6	172.8	2234.8	84.4	20.	64.4	B.	8.4	26.9	5.	21.9	.072	1.76	.096	1.664	2.92	.214	2.676	.002	.8	12.8	26.	......	—	18,000
8054	" 30	" 31	*	"	M. F.02	......	1981.6	166.4	1815.2	71.2	31.2	40.	B.	6.	24.8	5.6	19.2	.07	1.088	.176	.912	2.52	.348	2.172	.004	.68	12.2	26.	......	+	8,000
8078	Aug. 1	Aug. 2	*	"	M. F.02	......	1616.	155.6	1490.4	80.8	20.	60.8	B.	8.6	23.4	5.	18.4	.128	1.04	.104	.936	2.52	.228	2.292	.003	.68	11.7	27.	......	+	3,500
8091	" 3	" 4	*	"	M. F.02	......	1577.2	178.4	1398.8	82.8	25.6	57.2	B.	7.	23.7	4.8	18.9	.084	1.024	.128	.896	2.52	.244	2.276	.001	.68	10.9	29.	......	+	12,000
8100	" 6	" 7	*	"	M. F.01	......	1250.8	195.6	1055.2	52.	27.6	24.4	B.	8.6	20.2	7.4	12.8	.092	.608	.176	.432	2.04	.42	1.62	.001	.68	9.8	29.	......	+	8,000
8119	" 8	" 9	*	"	M. F.02	......	1066.	202.	864.	54.	26.	28.	B.	15.	16.	5.7	10.3	.086	.546	.16	.386	1.32	.276	1.044	.001	.44	8.4	29.	......	+	29,500
8148	" 10	" 11	*	"	M.	......	940.	197.2	742.8	63.6	22.4	41.2	B.	8.6	16.4	5.2	11.2	.072	.544	.272	.272	1.56	.38	1.18	....	.36	7.4	29.	......	+	12,000
8158	" 13	" 14	*	"	M.	......	898.8	211.2	687.6	56.8	20.8	36.	B.	9.	14.1	4.9	9.2	.076	.48	.176	.304	1.08	.268	.812	.004	.44	6.1	28.	......	+	80,000
8185	" 15	" 16	*	"	M. F.02	......	854.8	224.8	630.	40.8	22.	18.8	B.	10.	14.2	5.	9.2	.92	.448	.112	.336	.92	.252	.668	.002	.4	5.6	28.	......	+	29,000
8199	" 17	" 18	*	"	M.	......	367.6	226.8	140.8	25.6	22.8	2.8	B.	10.2	11.4	4.5	6.9	.94	.352	.176	.176	.936	.22	.716	.002	.48	5.1	29.	......	+	1,700
8225	" 20	" 21	*	"	M. F.01	......	1074.4	243.6	830.8	39.2	17.6	21.6	B.	14.	13.6	4.5	9.1	.116	.544	.208	.336	1.16	.332	.828	.002	.4	5.2	29.5	......	+	3,100
8262	" 22	" 23	*	"	M. F.04	......	1370.	206.	1164.	48.8	17.2	31.6	B.	9.	20.9	1.6	16.3	.144	.8	.192	.608	1.48	.3	1.18	.005	.68	8.9	29.	......	+	1,550
8276	" 24	" 25	*	"	M. F.04	......	1307.2	181.2	1126.	62.	14.4	47.6	B.	9.6	22.1	4.7	17.4	.156	.768	.112	.656	1.64	.22	1.42	.001	.56	9.1	28.	......	....	2,500
8301	" 27	" 28	*	"	M. F.	......	1146.8	201.2	945.6	60.4	16.8	43.6	DB.	13.	19.7	4.7	15.	.084	.704	.176	.528	1.64	.38	1.26	.001	.6	8.9	26.	......	—	2,150
8320	" 29	" 30	*	"	M. F.	......	1287.2	201.2	1086.	48.4	11.2	37.2	DB.	15.8	21.3	5.	16.3	.164	.704	.192	.512	1.56	.236	1.324	.002	.6	8.9	26.	......	+	3,350
8346	" 31	Sept. 1	*	Much	M. F.02	M'sty	1398.	168.8	1229.2	40.4	22.	18.4	DB.	11.	23.4	4.4	19.	.145	.672	.064	.608	1.96	.3	1.66	.001	.56	8.7	27.	......	—	3,350
8351	Sept. 3	" 4	§	V.M'ch	M. F.15	......	1236.8	183.6	1053.2	49.6	16.8	32.8	DB.	22.2	23.	5.3	17.7	.128	.736	.112	.624	2.2	.252	1.948	.004	.64	10.1	26.	......	+	3,100
8385	" 5	" 6	§	"	M. F.05	......	1381.2	212.	1169.2	65.6	15.2	50.4	DB.	18.4	23.2	4.9	18.3	.148	.752	.16	.592	1.88	.24	1.64	.001	.72	10.	27.	......	+	7,200
8410	" 7	" 8	§	"	VM.F.15	......	1320.	198.8	1121.2	49.6	18.8	30.8	DB.	15.	24.2	5.5	18.7	.12	1.024	.16	.864	1.96	.464	1.496	.002	.68	10.1	27.	......	+	4,700
8422	" 10	" 11	§	"	VM.F.05	......	1081.2	212.4	868.8	50.8	18.	32.8	DB.	11.6	20.8	5.	15.8	.12	.48	.128	.352	1.208	.384	.824	.002	.64	8.6	27.	......	—	5,300
8444	" 12	" 13	§	"	VM.F.1	......	1054.	209.2	844.8	39.6	20.4	19.2	DB.	12.2	19.6	6.2	13.4	.084	.544	.128	.416	1.176	.432	.744	.003	.48	7.8	26.	......	+	4,500
8466	" 14	" 15	§	"	VM.	......	886.4	228.4	658.	44.	20.4	23.6	DB.	10.2	20.8	7.1	13.7	.144	.48	.112	.368	1.208	.304	.904	.002	.41	7.1	24.	......	+	1,300
8482	" 17	" 18	§	Much	M. F.01	......	872.4	242.4	630.	58.	21.6	36.4	DB.	9.6	14.8	7.1	7.7	.056	.416	.128	.288	1.08	.368	.712	.003	.56	6.1	20.	......	—	3,100
8496	" 19	" 20	*	"	M. F.02	......	800.8	255.2	545.6	30.	18.8	11.2	DB.	11.4	14.7	7.9	6.8	.1	.4	.128	.272	1.144	.4	.744	.006	.56	6.	18.	......	—	10,600
8519	" 21	" 22	§	V.M'ch	M. F.1	......	1362.4	270.8	1091.6	43.6	26.4	17.2	DB.	11.2	20.4	7.3	13.1	.228	.592	.112	.48	1.56	.528	1.032	.002	.52	6.2	19.	......	+	25,300
8526	" 24	" 25	§	Much	VM.F.25	......	1879.2	258.8	1620.4	62.8	26.8	36.	DB.	10.8	19.4	7.9	11.5	.106	.8	.144	.656	1.72	.432	1.288	.003	.68	7.5	20.	......	+	20,900
8553	" 26	" 27	§	V.M'ch	M. F.3	......	1545.6	260.4	1285.2	68.8	18.8	50.	DB.	22.	24.6	8.6	16.	.168	.928	.128	.8	1.64	.32	1.32	.001	.6	7.6	22.	......	+	9,250
8570	" 28	" 29	*	Much	M.	......	1251.6	218.4	1033.2	61.2	18.	43.2	DB.	11.6	26.6	9.4	17.2	.125	.768	.256	.512	1.88	.614	1.266	.003	.64	8.	20.	......	+	11,500
8580	Oct. 1	Oct. 2	*	Cons'd	M. F.05	......	1223.6	207.6	1016.	54.4	23.6	30.8	DB.	11.6	24.8	9.3	15.5	.108	.72	.208	.412	.864	.512	.352	.004	.68	10.	19.	......	—	6,100
8619	" 4	" 5	§	Much	M. F.03	......	2023.2	186.	1837.2	31.2	18.8	12.4	DB.	8.2	19.8	9.8	10.	.152	1.248	.192	1.056	3.424	.432	2.992	.001	.64	....	....	......	—	5,700

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rb., Reddish. W., White.

Table 72.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of Arthur W. Palmer,
T. J. Burrill,
University of Illinois.

Source of Water—Mississippi River, 400 feet from Missouri Shore, at Chain of Rocks.
Pumping Station St. Louis Water Works.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue: Dissolved.	Residue: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen: By Dis-solved.	Oxygen: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dis-solved.	Organic Nitrogen: Sus-pended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6635	Jan. 5	Jan. 6	*	Cons'd	M. F.03	......	386.8	348.	38.8	35.2	26.	9.2	B.	26.	5.4	4.4	1.	.108	.128	.08	.048	.44	.36	.08	.008	.36	2.2	0.	4.5	—	6,100
6668	" 11	" 12	*	"	M. F.01	......	491.2	346.8	144.4	30.8	24.	6.8	B.	29.	6.5	5.	1.5	.036	.24	.144	.096	.72	.256	.464	.008	.4	3	0.	1.	+	1,450
6714	" 18	" 19	*	Much	M. F.02	......	680.8	389.6	291.2	28.	24.8	3.2	B.	31.4	7.8	4.3	3.5	.088	.256	.112	.144	.64	.192	.448	.004	.64	2.6	3.	......	+	186,000
6770	" 26	" 27	*	"	M. F.04	......	730.	338.8	391.2	26.8	17.2	9.6	B.	25.8	8.9	3.8	5.1	.064	.264	.112	.152	.8	.288	.512	.006	.18	5.6	1	-1.	?	66,150
6869	Feb. 8	Feb. 9	§	"	M. F.02	......	1205.2	271.6	933.6	41.2	14.8	26.4	B.	15.4	17.3	4.6	12.7	.208	.72	.16	.56	1.92	.224	1.696	.007	.6	2.7	2	-4.	....	16,600
6970	" 23	" 24	§	"	M. F.03	......	1035.6	286.8	748.8	30.	22.4	7.6	B.	19.6	13.8	....	....	.048	.448	.192	.256	1.12	.384	.736	.008	.84	8.	0.	4.5	—	54,000
7040	Mar. 8	Mar. 9	§	V.M'ch	V.M.F.04	......	3152.	146.	3006.	57.2	14.8	42.4	B.	5.6	28.5	6.2	22.3	.32	2.08	.128	1.952	4.64	.32	4.32	.016	1.12	15.	1	10.	+	162,000
7148	" 22	" 23	*	Much	M. F.05	......	1856.4	176.	1680.4	34.8	6.8	28.	B.	9.	22.9	5.4	17.5	.192	1.12	.206	.914	2.92	.504	2.416	.017	1.08	18.8	2.	13.	—	117,000
7197	" 29	" 30	*	"	M. F.03	......	1212	231.2	980.8	35.2	10.8	24.4	B.	12.4	16.7	4.6	12.1	.008	.576	.144	.432	1.8	.376	1.424	.025	1.08	15.	5.	7.	+	121,000
7251	Apr. 5	April 6	*	"	M. F.04	......	1530.4	298.	1232.4	29.2	10.8	18.4	B.	13.6	16.3	4.	12.3	.128	.56	.096	.464	1.688	.248	1.44	.025	.76	14.2	7	17.	+	58,000
7303	" 12	" 13	*	"	M. F.03	......	1853.2	303.2	1550.	46.4	11.6	34.8	B.	12.2	16.7	5.1	11.6	.064	.704	.112	.592	1.88	.312	1.568	.013	.48	15.8	7	2.	+	102,500
7351	" 19	" 20	*	"	M. F.03	......	2148.4	256.	1892.4	44.8	19.2	25.6	B.	9.4	12.8	7.5	5.3	.064	.864	.16	.704	2.12	.376	1.744	.015	.44	15.8	12.	22	+	18,000
7428	" 26	" 27	*	"	M. F.15	......	1783.6	222.8	1560.8	52.4	21.2	31.2	B.	9.8	16.8	5.4	11.4	.064	.728	.112	.616	1.96	.28	1.68	.009	.88	17.2	15.	21.	+	21,500
7459	May 3	May 4	*	"	M. F.03	......	1875.2	237.2	1638.	38.8	28.8	10.	B.	10.8	19.5	5.3	14.2	.024	1.152	.176	.976	2.66	.36	2.3	.012	.72	15.3	18	.....	?	71,500
7505	" 10	" 11	*	"	M. F.02	......	2014.	273.2	1740.8	56.4	18.4	38.	B.	14.4	27.2	5.1	22.1	.036	1.12	.096	1.024	3.14	.26	2.88	.006	.8	16.3	17.	18.	+	89,000
7568	" 17	" 18	§	V.M'ch	M. F.03	......	2409.6	303.2	2106.4	76.8	21.6	55.2	B.	16.4	26.2	6.1	20.1	.064	1.44	.08	1.36	3.54	.356	3.184	.004	.8	15	22.	23.	+	33,000
7609	" 24	" 25	§	"	M. F.05	......	2456.	283.2	2172.8	60.	23.2	36.8	B.	12.	28.3	6.5	21.8	.06	1.376	.08	1.296	4.26	.36	3.9	.003	.72	14.2	20.	27.	+	60,000
7640	" 31	June 1	§	Much	M. F.06	......	2422.	304.	2118.	85.6	36.8	48.8	B.	10.8	19.5	5.3	14.2	.04	1.12	.128	.992	2.98	.292	2.688	.01	.68	13.2	23.	22.	....	....
7678	June 7	" 8	*	"	M. F.03	......	2073.6	261.	1809.6	56.8	10.8	46.	B.	12.6	18.7	5.	13.7	.016	.832	.096	.736	2.1	.292	1.808	.005	.44	12.4	25.	21.	+	8,500
7728	" 14	" 15	§	"	M. F.10	......	3906.4	233.6	3672.8	48.	21.6	26.4	B.	8.8	26.7	6.8	19.9	.024	1.472	.176	1.296	3.7	.356	3.344	.006	6	10.7	21.	27.	...	15,500
7763	" 21	" 22	§	V.M'ch	M. F.05	......	2299.2	248.4	2050.8	47.6	24.4	23.2	B.	8.6	19.1	4.7	14.4	.04	.736	.064	.672	2.12	.292	1.828	.003	.4	11.2	25.	27.	....	39,500
7804	" 28	" 29	*	Cons'd	M. F.10	......	2751.2	210.	2541.2	76.	30.4	45.6	B.	7.4	27.4	5.	22.4	.11	1.84	.144	1.696	4.04	.292	3.748	.005	.64	13.9	26.	32.	+	8,000
7840	July 5	July 6	*	"	M. F.10	......	2901.2	206.	2695.2	93.6	18.4	75.2	B.	7.	23.1	4.9	18.2	.076	1.04	.128	.912	2.92	.....	.....	.001	.56	11.3	28.	.....	—	21,500
7878	" 9	" 10	*	"	M. F.03	......	3541.6	196.8	3344.8	72.8	12.4	60.4	B.	15.2	29.	4.5	24.5	.16	1.68	.144	1.536	3.24	.228	3.012	.001	.68	10.8	27.	.....	...	18,000
7911	" 11	" 12	*	"	M. F.03	......	2879.6	179.2	2700.4	60.8	18.4	42.4	B.	10.6	24.9	7.2	17.7	.14	.176	.112	.064	2.44	.18	2.26	.002	6	10.6	27.	.....	....	31,500
7920	" 13	" 14	*	"	M. F.02	......	2461.6	198.	2263.6	80.4	32.4	48.	B.	7.	18.5	4.3	14.2	.072	.832	.08	.752	2.36	.116	2.244	.001	.52	10.3	26.	.....	....	21,000
7931	" 16	" 17	*	"	M. F.02	......	2290.4	218.8	2071.6	70.4	36.4	34.	B.	8.	17.7	4.6	13.1	.044	.688	.08	.608	1.8	.244	1.556	.004	.44	10.1	27.	.....	+	22,000
7964	" 18	" 19	*	"	M. F.02	......	2420.8	197.6	2223.2	74.8	16.	58.8	B.	9.6	18.5	3.9	14.6	.1	.832	.144	.688	2.52	.148	2.372	.004	.36	9.7	25.	.....	—	18,000
7989	" 20	" 21	*	"	M. F.02	......	2202.	195.2	2006.8	60.	32.	28.	B.	11.	19.3	5.3	14.	.108	1.152	.144	1.008	1.88	.18	1.7	.001	.4	9.4	26.	.....	+	77,000
8001	" 23	" 24	*	"	M. F.02	......	2944.	200.	2744.	66.4	19.6	46.8	B.	7.2	19.2	4.	15.2	.076	.896	.064	.832	1.96	.148	1.812	.001	.56	9.1	26.	.....	....	2,400
8028	" 25	" 26	*	"	M. F.01	......	3653.6	266.4	3387.2	132.	22.8	109.2	B.	8.	29.7	7.2	22.5	.152	1.52	.112	1.408	1.36	.276	1.084	.005	.84	13.2	26.	.....	+	1,600

Turbidity—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. Color—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

Color on Ignition—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 FEET FROM MISSOURI SHORE, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ign.: Tot'l	Loss on Ign.: Dissolv'd	Loss on Ign.: Susp'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Susp'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
8038	July 27	July 28	*	Cons'd	M. F.05	......	2605.6	173.2	2432.4	87.6	23.2	64.4	B.	10.	27.7	4.9	22.8	.064	1.84	.112	1.728	2.92	.24	2.68	.002	.78	12.8	26.	......	+	14,500
8052	" 30	" 31	*	"	M. F.01	......	2234.8	168.8	2066.	110.	25.2	84.8	B.	6.6	21.8	4.	20.8	.128	1.248	.08	1.168	3.32	.244	3.076	.001	.68	12.2	26.	......	+	11,000
8076	Aug. 1	Aug. 2	*	"	M. F.02	......	2040.8	170.8	1870.	109.2	20.4	88.8	B.	9.4	24.9	4.6	20.3	.08	1.04	.16	.88	2.92	.356	2.564	.003	.64	11.7	27.	......	....	......
8090	" 3	" 4	*	"	M. F.02	......	1740.8	193.	1547.8	54.	36.	18.	B.	8.	25.1	4.1	21.	.152	1.056	.16	.896	2.6	.228	2.372	.001	.68	10.9	29.	......	+	22,500
8102	" 6	" 7	*	"	M. F.01	......	1384.4	205.6	1178.8	51.6	36.	21.6	B.	9.8	20.9	6.3	14.6	.1	.768	.16	.608	1.96	.308	1.652	.001	.64	9.8	29.	......	—	6,000
8118	" 8	" 9	*	......	......	......	......	......	......	....	......	....	......	......	....	....	....	......	......	......	......	......	......	......	....	....	8.4	29.	......	—	21,000
8147	" 10	" 11	*	Cons'd	M. F.01	......	1039.6	199.6	810.	66.	21.6	44.4	B.	9.6	16.2	4.3	11.9	.08	.576	.24	.336	1.61	.324	1.316	....	.52	7.4	29.	......	—	36,000
8160	" 13	" 14	*	"	M. F.01	......	976.4	225.2	751.2	63.6	33.6	30.	B.	9.8	15.1	4.3	10.8	.068	.448	.176	.272	1.08	.284	.796	.001	.52	6.1	28.	......	—	6,000
8182	" 15	" 16	*	"	M. F.02	......	918.	233.6	684.4	42.	30.4	11.6	B.	10.6	13.	3.8	9.2	.1	.448	.128	.32	1.08	.236	.844	.002	.52	5.6	28.	......	+	10,000
8197	" 17	" 18	*	"	M. F.01	......	435.6	218.8	216.8	49.2	27.6	21.6	B.	10.8	11.5	4.	7.5	.076	.352	.208	.144	1.08	.252	.828	.002	.44	5.1	29.	......	+	3,050
8222	" 20	" 21	*	"	M. F.01	......	1284.4	270.4	1014.	36.	12.8	23.2	B.	15.2	13.3	4.2	9.1	.112	.576	.16	.416	1.16	.188	.972	.003	.41	5.2	29.5	......	+	2,800
8261	" 22	" 23	*	"	M. F.02	......	1598.4	236.4	1362.	51.2	18.	33.2	B.	11.2	20.2	3.9	16.3	.14	.88	.128	.752	1.88	.156	1.724	.003	.6	8.9	29.	......	....	......
8277	" 24	" 25	*	"	M. F.1	......	1468.8	193.6	1275.2	72.8	12.	60.8	B.	12.	21.4	4.2	17.2	.161	.864	.08	.784	2.12	.204	1.916	.001	.52	9.1	28.	......	+	2,800
8303	" 27	" 28	*	"	M. F.02	......	1300.8	216.	1084.8	47.2	14.8	32.4	B.	15.4	20.1	4.5	15.6	.116	.608	.096	.512	1.64	.284	1.356	.002	.68	8.9	26.	......	+	2,500
8319	" 29	" 30	*	"	M. F.02	......	1405.6	1216.8	188.8	55.2	11.2	44.	DB.	18.4	21.2	4.9	16.3	.148	.416	.176	.24	1.72	.46	1.26	.002	.6	8.9	26.	......	+	5,800
8347	" 31	Sept. 1	*	Much	M. F.03	M'sty	1523.6	205.2	1318.4	33.2	24.4	8.8	DB.	12.8	23.3	3.7	19.6	.284	.704	.224	.48	1.8	.188	1.612	.001	.6	8.7	27.	......	+	6,150
8350	Sept. 3	" 4	§	V. M'ch	M. F.02	......	1421.4	204.	1220.4	52.4	18.4	34.	DB.	29.	24.	4.9	19.1	.2	.8	.096	.704	.6	......	......	.025	.6	10.1	26.	......	+	2,850
8386	" 5	" 6	§	"	M. F.04	......	1580.	228.	1352.	46.4	14.4	32.	DB.	22.2	24.2	4.	20.2	.124	.768	.096	.672	2.04	.21	1.8	.002	.76	10.	27.	......	+	7,400
8111	" 7	" 8	§	"	VM. F.02	......	1603.6	210.	1393.6	35.6	17.6	18.	DB.	18.2	24.6	4.5	20.1	.168	.96	.208	.752	2.44	.656	1.784	.004	.64	10.4	27.	......	+	5,150
8425	" 10	" 11	§	"	VM. F.05	......	1315.2	229.2	1086.	31.8	15.6	19.2	DB.	14.	20.5	4.	16.5	.176	.48	.192	.298	1.64	.352	1.288	.003	.76	8.6	27.	......	—	3,850
8145	" 12	" 13	§	"	VM. F.03	......	1238.	243.6	991.4	36.	24.4	11.6	DB.	16.4	19.	4.2	14.8	.10	.704	.128	.576	1.336	.24	1.096	.002	.52	7.8	26.	......	+	4,000
8467	" 14	" 15	§	"	VM F.02	......	1088.	257.6	830.4	47.2	19.2	28.	DB.	11.8	19.2	6.4	12.8	.156	.496	.124	.372	1.24	.672	.568	.002	.6	7.1	24.	......	+	2,900
8180	" 17	" 18	§	Much	M. F.02	......	1057.6	280.8	776.8	42.4	16.4	26.	DB.	11.6	15.4	5.1	10.3	.064	.4	.096	.304	.92	.32	.6	.004	.64	6.1	20.	......	—	1,000
8499	" 19	" 20	*	"	M. F.01	......	917.2	279.6	637.6	34.8	16.4	18.4	B.	13.8	14.	5.4	8.6	.084	.4	.176	.224	1.08	.336	.644	.006	.56	6.	18.	......	—	10,100
8518	" 21	" 22	§	"	M. F.05	......	1594.	290.8	1303.2	34.	20.	14.	DB.	13.2	16.8	8.1	8.7	.074	.576	.096	.48	1.61	.236	1.404	.002	.08	6.2	19.	......	+	47,950
8527	" 24	" 25	§	V. M'ch	VM. F.25	......	2148.4	285.6	1862.8	65.6	25.6	40.	DB.	12.4	20.7	7.4	13.3	.132	.864	......	......	2.04	.512	1.528	.002	.84	7.5	20.	......	+	27,100
8552	" 26	" 27	§	"	M. F.07	......	1880.	282.4	1597.6	90.	17.2	72.8	DB.	27.6	24.9	7.5	17.4	.18	.864	.128	.736	2.81	.56	2.28	.001	.8	7.6	22.	......	—	26,750
8572	" 28	" 29	*	Much	M.	......	1573.2	242.4	1330.8	53.6	16.	37.6	DB.	15.4	26.4	6.8	19.6	.152	1.12	.24	.88	2.02	.608	1.412	.004	.92	8.	20.	......	+	15,000
8583	Oct. 1	Oct. 2	§	"	M. F.3	......	1673.2	244.8	1428.4	62.8	18.	44.8	DB.	16.2	23.8	6.3	17.5	.188	.864	.224	.64	2.224	.352	1.872	.003	.64	10.	19.	......	—	5,800
8620	" 4	" 5	..	......	......	......	......	....	......	....	......	....	......	......	....	....	....	......	......	......	......	......	......	......	....	....	....	....	......	....	......
....	......	......	..	......	......	......	......	....	......	....	......	....	......	......	....	....	....	......	......	......	......	......	......	......	....	....	....	....	......	....	......

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.
COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 73.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSOURI RIVER, FORT BELLEFONTAINE, WEST ALTON, MO.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
6630	Jan. 4	Jan. 6	*	Cons'd	M. F.01	......	454.4	386.4	68.	26.	23.2	2.8	B.	26.8	3.9	3.3	.6	.068	.208	.112	.096	.36	.232	.128	.008	.32	1.7	1.	3.	—	21,000
6681	“ 11	“ 13	*	Much	M. F.03	......	578.	370.	208.	23.2	20.4	2.4	B.	33.5	5.2	3.5	1.7	.048	.176	.112	.064	.56	.32	.24	.004	.32	3.3	2.	5.	+	11,200
6726	“ 18	“ 20	*	“	M. F.01	......	769.	395.6	373.4	18.4	6.8	11.6	B.	35.4	8.	1.3	3.7	.12	.32	.128	.192	.72	.32	.4	.007	.28	4.1	1.	6.	+	309,000
6766	“ 25	“ 27	*	“	M. F.01	......	773.2	338.	435.2	28.	22.	6.	B.	29.	9.6	3.9	5.7	.08	.32	.16	.16	.88	.32	.56	.008	.64	5.1	2.	3.	+	43,600
6816	Feb. 1	Feb. 3	*	Cons'd	M. F.02	......	533.2	384.8	148.4	24.4	22.4	2.	B.	26.9	5.3	4.1	1.2	.06	.16	.096	.064	.416	.16	.256	.011	.52	2.8	1.	5.	—	40,000
6866	“ 7	“ 9	+	“	M. F.02	......	548	347.2	200.8	9.6	7.6	2.	B.	20.4	4.1	3.6	.5	.048	.128	.096	.032	.384	.192	.192	.005	.48	2.	7.	12.	....	75,500
6918	“ 14	“ 16	*	Much	M. F.03	......	804.8	303.2	501.6	32.8	14.8	18.	B.	22.8	12.1	3.2	8.9	.068	.448	.224	.224	.96	.32	.64	.008	.56	3.4	2.	5.	+	37,200
6965	“ 21	“ 23	*	Cons'd	M. F.02	......	474.4	321.6	152.8	25.6	25.2	.4	B.	25.	4.9	4.2	.7	.08	.272	.176	.096	.56	.32	.24	.01	.72	2.7	2.	9.	—	7,500
7043	Mar. 7	Mar. 9	§	V. Mc'h	VM. F.01	......	1882.8	180.4	1702.4	100.8	14.8	86.	B.	7.8	23.	6.5	16.5	.216	2.	.16	1.84	4.96	.576	4.384	.015	.64	13.3	2.	5.	+	135,000
7080	“ 13	“ 15	§	“	VM. F.4	......	3430.8	182.4	3248.4	50.4	14.8	35.6	B.	9.2	27.8	6.7	21.1	.22	1.92	.192	1.728	1.16	.544	3.616	.015	1.4	16.5	5.	13.	+	260,000
7152	“ 22	“ 24	*	Much	M. F.05	......	1734.8	197.6	1537.2	51.6	14.	37.6	B.	9.6	19.9	5.4	14.5	.16	1.12	.208	.912	2.76	.504	2.256	.02	1.12	10.9	8.	16.	+	206,000
7205	“ 29	“ 31	*	“	M. F.2	......	982.8	241.2	711.6	42.8	12.	30.8	B.	12.8	16.	5.2	10.8	.068	.56	.192	.368	1.656	.44	1.216	.021	.88	7.9	11.	9.	+	118,000
7228	April 3	April 5	*	“	M. F.04	......	1286.	282.4	1003.6	31.	7.6	26.4	B.	14.1	16.4	5.4	11.	.06	.56	.096	.464	1.64	.304	1.336	.035	.72	9.2	12.	17.	+	84,000
7290	“ 10	“ 12	§	“	VM. F.03	......	1708.	293.2	1414.8	43.6	12.	31.6	B.	12.8	17.3	4.7	12.6	.024	.64	.096	.544	1.64	.216	1.424	.016	.64	9.3	11.	6.	+	64,000
7333	“ 16	“ 18	*	V. M'ch	VM. F.03	......	3026.8	258.8	2768.	66.4	15.2	51.2	B.	12.	19.9	4.7	15.2	.016	.992	.096	.896	3.4	.312	3.088	.015	.72	12.5	12.	18.	+	119,000
7403	“ 23	“ 25	§	“	M. F.	......	1923.6	223.6	1700.	44.4	19.6	21.8	B.	9.4	19.3	5.7	13.6	.02	.96	.128	.832	2.44	.344	2.096	.012	.72	10.6	15.	......	+	41,000
7447	May 1	May 3	§	“	M. F.	......	1626.	237.6	1388.4	56.8	14.4	42.4	B.	15.2	22.4	5.8	16.6	.02	.896	.16	.736	2.66	.42	2.24	.007	1.28	11.	20.	25.	+	92,000
7491	“ 8	“ 10	*	Much	VM. F.03	......	2290.	245.2	2044.8	64.	18.	46.	B.	10.8	25.6	5.9	19.7	.052	1.6	.128	1.472	3.78	.26	3.52	.008	.8	10.8	21.	26.	+	111,000
7550	“ 15	“ 16	*	“	M. F.05	......	2855.2	316.8	2538.4	85.2	19.6	65.6	B.	11.4	27.5	4.9	22.6	.104	1.6	.16	1.44	2.9	.256	2.644	.003	.76	11.8	23.	27.	+	14,000
7592	“ 22	“ 23	§	V. M'ch	M. F.02	......	2697.2	305.6	2391.6	84.8	20.4	64.4	B.	12.8	27.3	4.5	22.8	.052	1.12	.064	1.056	3.14	.484	2.656	.004	.64	11.2	21.	26.	....	55,000
7635	“ 29	“ 31	§	“	M. F.05	......	2220.	300.	1920.	52.8	39.6	13.2	B.	16.5	19.9	5.3	14.6	.052	1.216	.16	1.056	2.9	.372	2.528	.004	.8	11.6	21.	27.	‡	59,000
7669	June 5	June 6	*	Cons'd	M. F.02	......	2176.4	282.	1894.4	56.8	22.	34.8	B.	13.4	18.8	5.8	13.	.016	.768	.112	.656	2.34	.292	2.048	.004	.68	10.8	25.	26.	‡	77,000
7719	“ 12	“ 14	*	Much	M. F.06	......	2180.4	262.8	1917.6	63.2	22.4	40.8	B.	10.6	18.3	7.3	11.	.02	.88	.16	.72	2.98	.8	2.18	.007	.48	10.4	25.	24.	+	113,000
7758	“ 19	“ 21	*	“	M. F.02	......	2431.6	241.6	2190.	46.8	18.8	28.	B.	9.6	18.5	4.7	13.8	.036	.704	.096	.608	2.92	.188	2.732	.003	.56	11.	26.	24.	+	32,000
7798	“ 27	“ 28	*	Cons'd	M. F.10	......	3585.2	218.4	3366.8	123.6	20.4	103.2	B.	8.4	28.7	4.8	13.9	.082	1.76	.144	1.616	6.28	.213	6.068	.001	.68	12.9	25.	26.	+	31,500
7833	July 3	July 4	*	“	M. F.03	......	2567.6	199.2	2368.4	44.	20.4	23.6	B.	6.4	22.6	6.2	16.4	.052	.992	.096	.896	2.28	.308	1.972	.001	.28	11.4	28.	......	+	38,000
7907	“ 10	“ 11	*	“	M. F.02	......	3438.4	201.2	3237.2	116.	27.2	88.8	B.	7.8	28.	8.2	19.8	.166	.324	.16	.164	.642	.346	.286	.002	.68	11.	27.	......	‡	48,500
7968	“ 17	“ 18	*	“	M. F.01	......	2364.8	199.6	2165.2	60.	8.	52.	B.	8.7	18.2	5.1	13.1	.128	.702	.128	.574	2.2	.292	1.908	.001	.44	10.4	29.	......	...	4,000
8022	“ 24	“ 26	*	“	M. F.01	......	4124.8	207.6	3917.2	514.8	18.	496.8	B.	9.	21.4	6.7	17.7	.111	1.52	.096	1.424	1.2	.212	3.988	.005	.6	11.7	28.	......	‡	....
8080	Aug. 1	Aug. 2	*	“	M. F.02	......	2031.	172.4	1861.6	84.8	16.8	68.	B.	7.	25.5	4.5	21.	.102	1.504	.16	1.344	2.92	.228	2.692	.007	.56	9.7	29.	......	+	17,500
8125	“ 7	“ 9	*	“	M. F.01	......	1305.2	230.	1075.2	89.6	34.4	55.2	B.	18.	18.9	3.8	15.1	.086	.544	.224	.32	1.8	.324	1.476	.001	.44	7.4	31.	......	+	11,400
8179	“ 14	“ 16	*	“	M. F.02	......	968.4	230.	738.4	58.8	56.4	2.4	B.	11.	13.4	3.9	9.5	.076	.18	.112	.368	1.08	.252	.828	.001	.44	5.8	29.	......	‡	16,000
8259	“ 21	“ 23	*	“	M. F.02	......	1623.2	246.	1377.2	38.4	13.2	25.2	B.	12.2	20.5	3.9	16.6	.134	.88	.128	.752	1.96	.108	1.852	.002	.6	....	....	......	....	....
8328	“ 28	“ 30	*	“	M. F.	......	1609.6	197.6	1412.	56.4	15.6	40.8	B.	22.6	22.7	4.3	18.4	.158	.896	.08	.816	2.2	.236	1.964	.001	.68	7.3	28.	......	....	4,900
8381	Sept. 4	Sept. 5	§	V. M'ch	M. F.02	......	1662.8	228.4	1434.4	63.2	14.	49.2	B.	28.	25.4	3.4	22.	.151	.8	.064	.736	2.2	.368	1.832	.001	.76	8.5	28.	......	+	7,200
8447	“ 11	“ 13	§	“	VM. F.02	......	1492.	271.6	1220.4	43.6	19.2	24.4	DB.	23.	20.2	4.	16.2	.096	.656	.112	.544	1.336	.272	1.064	.004	.64	6.3	27.	......	‡	4,050
8491	“ 18	“ 20	§	Much	M. F.01	......	1171.2	342.	829.2	50.4	16.4	34.	B.	15.4	15.	5.4	9.6	.08	.448	.096	.352	1.16	.368	.792	.007	.68	4.7	21.	......	....	11,500
8548	“ 25	“ 27	§	V. M'ch	VM. F.05	......	2385.6	344.4	2041.2	89.6	17.2	72.4	DB.	31.6	22.5	5.7	16.8	.12	1.056	.144	.912	2.68	.272	2.408	.001	.8	6.1	24.	......	....	78,000
8608	Oct. 2	Oct. 3	§	“	M. F.02	......	2201.6	252.8	1948.8	52.4	17.2	35.2	DB.	15.8	24.9	7.1	17.8	.190	1.28	.192	1.088	3.344	.448	2.896	.001	.76	....	....	......	....	....

TURBIDITY—* Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 74.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 YARDS FROM ILLINOIS SHORE, JEFFERSON BARRACKS, MO.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dis-solved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dis-solved.	Organic Nitrogen: Sus-pended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
6614	Jan. 4	Jan. 5	*	Cons'd	M. F.03	......	340.8	321.6	19.2	28.4	22.8	5.6	G.	21.2	11.3	9.4	1.9	.7	.4	.256	.144	.92	.584	.336	.02	.72	1.	0.	......	+	1,650
6673	" 11	" 12	*	"	M. F.04	......	270.8	242.4	28.4	26.	25.6	.4	B.	10.2	10.2	8.1	2.1	.32	.48	.221	.256	.88	.544	.336	.011	.28	2.5	0.	......	+	15.000
6712	" 18	" 19	*	Much	M. F.03	......	277.6	226.8	50.8	30.4	27.6	2.8	B.	9.	10.8	9.	1.8	.088	.432	.16	.272	.96	.616	.341	.008	1.01	2.6	3.	......	+	22,000
6761	" 25	" 26	*	"	M. F.2	......	428.8	186.8	242.	31.6	18.	13.6	B.	6.2	14.9	7.7	7.2	.292	.512	.256	.256	1.28	.512	.768	.013	1.	5.9	4.	......	+	38,400
6821	Feb. 3	Feb. 5	*	Cons'd	M. F.3	......	308.8	283.6	25 2	41.6	39.2	2.4	B.	16.	9.3	7.5	1.8	.6	.336	.176	.16	.704	.384	.32	.013	.92	.6	0.	......	+	21,700
6874	" 9	" 10	*	Much	M. F.04	......	1497.6	200.8	1296.8	57.2	15.6	41.6	B.	8.4	19.9	7.5	12.4	.511	1.36	.192	1.168	3.12	.....	.....	.01	.8	4.7	0.	......	....	62,500
6961	" 22	" 23	*	"	M. F.25	......	840.4	170.	670.4	85.2	23.6	61.6	B.	6.	17.7	8.8	8.9	.48	.861	.272	.592	1.52	.544	.976	.017	1.2	6.4	0.	......	+	132,000
7010	Mar. 3	Mar. 4	†	Cons'd	M. F.3	......	326.	184.4	141.6	34.8	13.2	31.6	B.	6.8	13.9	9.4	4.5	.336	.448	.24	.208	1.04	.64	.4	.02	1.32	6.2	0.	......	+	98,000
7047	" 8	" 9	§	V.M'ch	M. F.04	......	1329.2	148.	1181.2	34.	10.4	23.6	B.	5.	19.1	6 6	12.5	.32	.864	.16	.704	2.72	.32	2.4	.014	1.12	14.	0.	......	+	166.500
7098	" 16	" 17	§	"	VM.F.05	......	1429.2	113.2	1316.	46.	7.6	38.4	B.	3.	23.3	6.7	16.6	.32	1.2	.176	1.024	2.88	.48	2.4	.009	.84	23.5	2.	......	+	136.000
7140	" 22	" 23	§	"	VM.F.04	......	851.6	132.8	718.8	43.6	17.2	26 4	B.	5.5	19.5	6.4	13.1	.328	.8	.192	.608	2.04	.536	1.504	.016	1.28	18.5	2.	......	+	75.000
7191	" 29	" 30	*	Much	M. F.08	......	652.4	134.8	517.6	27.6	10.4	17.2	B.	4.4	15.1	6.8	8.3	.288	.448	.24	.208	1.272	.696	.576	.016	1.08	13.	8.	......	+	133.000
7243	Apr. 5	Apr. 6	*	"	M. F.30	.....	447.2	131.2	316.	19.2	9.2	10.	B.	4.3	13.5	6.9	6.6	.272	.384	.192	.192	1.144	.376	.768	.017	1.24	14.8	7.	......	+	36.000
7309	" 12	" 13	*	"	M. F 04	......	572.4	143.6	428.8	50.4	19.6	30.8	B.	4.6	17.	7.1	9.9	.208	.608	.224	.384	1.24	.6	.64	.022	1.32	15.8	8.	......	+	107.000
7377	" 20	" 21	*	"	M. F.03	......	498.8	161.2	337.6	24.8	20.	4.8	B.	4.8	13.	6.3	6.7	.08	.336	.208	.128	1.	.536	.464	.05	1.08	16.	12.	......	+	21.000

TURBIDITY—*Decided. §Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 75.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, EAST OF MIDSTREAM, JEFFERSON BARRACKS, MO.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ign'n. Tot'l	Loss on Ign'n. Dis-solv'd	Loss on Ign'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6615	Jan. 4	Jan. 5	*	Cons'd	M. F.03	......	334.	318.8	15.2	36.8	34.	2.8	B.	21.2	9.6	8.7	.9	.66	.336	.208	.128	.76	.616	.144	.017	.72	1.	0.	......	+	1,800
6676	" 11	" 12	*	"	M. F.04	......	308.	239.6	68.4	23.	15.8	7.2	B.	10.	11.	8.4	2.6	.34	.576	.192	.384	1.04	.544	.496	.009	.48	2.5	0.	......	+	24,100
6711	" 18	" 19	*	Much	M. F.04	......	309.2	224.8	84.4	21.2	18.	3.2	B.	10.	11.4	8.5	2.9	.076	.432	.16	.272	.96	.416	.544	.008	.72	2.6	3.	......	+	20,800
6762	" 25	" 26	*	"	M. F.05	......	435.2	201.2	234.	39.2	24.	15.2	B.	8.4	14.3	7.1	7.2	.188	.496	.224	.272	1.36	.384	.976	.015	.88	5.9	4.	......	+	36,400
6822	Feb. 3	Feb. 5	‡	Cons'd	M. F.03	......	387.6	294.4	93.2	32.8	28.4	4.4	B.	16.6	10.8	7.8	3.	.6	.352	.16	.192	.736	.384	.352	.012	1.04	.6	0.	......	+	39,200
6959	" 22	" 23	‡	Much	VM. F.25	......	835.2	166.8	668.4	89.2	24.8	64.4	B.	6.	18.9	9.	9.9	.196	.832	.256	.576	1.84	.64	1.2	.013	1.4	6.4	0.	......	+	140,000
7012	Mar. 3	Mar. 5	‡	Cons'd	M. F.3	......	308.4	192.4	116.	31.2	25.2	6.	B.	7.	13.7	9.1	4.6	.4	.432	.301	.128	1.12	.736	.384	.022	1.2	6.2	0.	......	+	133,000
7048	" 8	" 9	§	V. M'ch	VM. F.08	......	1752.4	146.	1606.4	80.	9.6	70.4	B.	5.6	19.3	5.9	13.4	.304	1.024	.16	.864	2.88	.416	2.464	.013	.76	14.	0.	......	+	187,500
7097	" 16	" 17	§	"	VM. F.03	......	1580.8	121.2	1459.6	41.6	13.6	28.	B.	1.6	22.9	6.6	16.3	.288	1.2	.208	.992	2.88	.416	2.464	.011	.68	23.5	2.	......	+	198,000
7139	" 22	" 22	‡	Much	M. F.3	......	778.4	125.2	653.2	42.8	17.2	25.6	B.	4.	18.3	6.5	11.8	.336	.864	.176	.688	1.88	.6	1.28	.015	1.12	18.5	2.	......	+	75,000
7193	" 29	" 30	*	"	M. F.06	......	548.	150.4	397.6	22.8	14.4	8.4	B.	4.	11.3	7.7	6.6	.32	.448	.192	.256	1.24	.504	.736	.015	.88	13.	8.	......	+	121,000
7244	Apr. 5	Apr. 6	*	"	M. F.03	......	398.8	143.2	255.6	32.4	25.2	7.2	B.	3.9	12.7	6.1	6.6	.256	.384	.192	.192	1.144	.408	.736	.017	1.32	14.8	7.	......	+	31,000
7310	" 12	" 13	*	"	M. F.06	......	562.	141.2	420.8	37.2	15.2	22.	B.	4.3	18.	7.3	10.7	.208	.672	.208	.464	1.61	.536	1.104	.027	1.21	15.8	8.	......	+	36,000
7379	" 20	" 21	*	"	M. F.04	......	620.4	163.2	457.2	31.2	16.8	14.4	B.	4.7	11.	7.2	6.8	.096	.416	.176	.24	1.	.172	.528	.045	1.04	16.	12.	......	+	9,500

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight.

COLOR M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 76.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, JEFFERSON BARRACKS, MO.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Loss on Ign. Tot'l	Loss on Ign. Dissolv'd	Loss on Ign. Susp'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Susp'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6617	Jan. 4	Jan. 5	*	Cons'd	M. F.03	......	388.8	332.4	56.4	25.6	20.8	4.8	B.	22.4	9.4	9.1	.3	.66	.32	.208	.112	.76	.448	.312	.017	.64	1.	0.	......	+	3,400
6675	" 11	" 12	*	"	M. F.04	......	325.2	239.6	85.6	36.8	33.2	3.6	B.	11.2	12.4	8.2	4.2	.4	.448	.224	.224	.96	.64	.32	.011	.48	2.5	0.	......	+	15,000
6708	" 18	" 19	*	Much	M. F.03	......	361.6	258.8	102.8	30.4	28.4	2.	B.	13.2	11.5	9.	2.5	.064	.384	.208	.176	.88	.384	.496	.008	.68	2.6	3.	......	+	27,000
6763	" 25	" 26	*	"	M. F.03	......	508	231.2	276.8	34.4	25.6	8.8	B.	11.8	12.9	6.2	6.7	.12	.384	.192	.192	.88	.32	.56	.01	.68	5.9	4.	......	+	36,000
6825	Feb. 3	Feb 5	*	Cons'd	M. F.04	......	386.	300.4	85.6	32.	30.8	1.2	B.	16.8	8.3	6.3	2.	.6	.272	.144	.128	.688	.448	.24	.015	.72	.6	0.	......	+	62,200
6873	" 9	" 10	*	V.M'ch	VM.F.03	......	1076.8	243.2	833.6	54.	18.8	25.2	B.	11.4	17.3	6.6	10.7	.304	.768	.16	.608	2.16	.32	1.84	.008	.88	4.7	0.	......	....	79,000
6958	" 22	" 23	*	Much	VM.F.25	......	756.4	167.2	589.2	74.8	27.2	47.6	B.	6.4	19.	8.9	10.1	.432	.736	.256	.48	1.44	.64	.8	.015	1.12	6.4	0.	......	+	109,000
7007	Mar. 3	Mar. 5	*	Cons'd	M. F.5	......	373.2	214.8	158.4	41.6	28.4	13.2	B.	7.2	13.8	9.	4.8	.304	.432	.248	.184	1.04	.544	.496	.017	1.32	6.2	0.	......	+	51,000
7046	" 8	" 9	§	V.M'ch	VM.	......	1968.	141.6	1826.4	58.8	13.2	45.6	B.	4.4	24.6	5.7	18.9	.24	1.184	.208	.976	3.2	.384	2.816	.011	1.01	14.	0.	......	+	153,500
7101	" 16	" 17	§	"	VM.F.03	......	2166.8	130.4	2036.4	48.8	12.8	36.	B.	5.6	28.7	6.5	22.2	.288	1.2	.192	1.008	3.2	.384	2.816	.014	.92	23.5	2.	......	+	188,000
7143	" 22	" 23	*	Much	M. F.25	......	814.	123.6	690.4	31.2	13.6	17.6	B.	3.8	20.3	6.2	14.1	.32	.8	.24	.56	2.04	.6	1.44	.015	.6	18.5	2.	......	+	103,000
7189	" 29	" 30	*	"	M. F.06	......	518.	130.8	387.2	30.4	11.2	19.2	B.	4.4	14.3	7.	7.3	.288	.432	.176	.256	1.24	.44	.8	.013	1.08	13.	8.	......	+	74,500
7245	Apr. 5	Apr. 6	*	"	M. F.05	......	422.	144.	278.	31.6	12.	19.6	B.	4.	14.	6.5	7.5	.256	.384	.176	.208	1.176	.472	.704	.018	.72	14.8	7.	......	+	37,000
7305	" 12	" 13	*	"	M. F.06	......	672.	143.2	528.8	44.8	18.	26.8	B.	3.8	18.9	7.5	11.4	.208	.768	.24	.528	1.88	.568	1.312	.032	1.16	15.8	8.	......	+	77,000
7375	" 20	" 21	*	"	M. F.06	......	967.2	174.8	792.4	40.8	19.2	21.6	B.	5.4	15.4	7.7	7.7	.048	.448	.176	.272	1.4	.536	.864	.04	.76	16.	12.	......	+	31,000

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 77.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, WEST OF MIDSTREAM, JEFFERSON BARRACKS, MO.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

Serial No.	Date of		Appearance.			Odor.	Residue on Evaporation.						Color on Ignition.	Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
										Loss on Ig'n.									Albuminoid Am.												
	1900 Collection.	1900 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended.	Tot'l	Dissolv'd	Suspnd'd			Total.	By Dissolved.	By Suspd Matter.	Free Ammonia.	Tot'l	Dissolv'd	Suspnd'd	Total.	Dissolved.	Suspended.	Nitrites.	Nitrates.					
6618	Jan. 1	Jan. 5	*	Cons'd	M. F.03	......	372.4	316.	56.4	29.6	29.6	....	B.	21.2	12.5	9.3	3.2	.72	.432	.24	.192	.92	.488	.432	.02	.8	1.	0.	......	+	20.000
6672	" 11	" 12	*	"	M. F.04	......	382.4	267.2	115.2	31.2	28.	3.2	B.	15.	9.	7.2	1.8	.2	.416	.176	.24	.8	.416	.384	.01	.52	2.5	0.	......	+	28,000
6709	" 18	" 19	*	Much	M. F.03	......	550.8	316.4	234.4	39.2	28.8	10.4	B.	22.2	10.6	7.1	3.5	.072	.352	.112	.24	.8	.384	.416	.007	.64	2.6	3.	......	‡	57.200
6760	" 25	" 26	*	"	M. F.03	......	610.	260.	350.	24.	13.2	10.8	B.	15.2	12.	5.5	6.5	.132	.416	.16	.256	.96	.32	.64	.01	.64	5.9	4.	......	‡	19.900
6826	Feb. 3	Feb. 5	*	Cons'd	M. F.04	......	398.4	302.4	96.	22.8	21.6	1.2	B.	18.4	8.1	6.3	1.8	.56	.352	.192	.16	.704	.448	.256	.014	.92	.6	0.	......	+	97.200
6962	" 22	" 23	*	Much	VM. F.	......	563.2	213.2	350.	58.4	21.2	37.2	B.	11.	15.6	7.1	8.5	.304	.608	.24	.368	.96	.48	.48	.012	.92	6.4	0.	......	—	101.000
7011	Mar. 3	Mar. 5	*	Cons'd	M. F.03	......	450.	321.6	128.4	18.4	15.6	2.8	B.	17.6	8.8	6.2	2.6	.08	.32	.272	.048	.88	.48	.4	.012	.8	6.2	0.	......	+	55,500
7044	" 8	" 9	§	V. M'ch	VM. F.05	......	2930.4	144.	2786.4	72.	13.2	58.8	B.	5.2	29.	7.1	21.9	.288	1.696	.128	1.568	3.84	.448	3.392	.014	1.08	14.	0.	......	+	125,000
7100	" 16	" 17	§	"	VM. F.03	......	2471.8	143.6	2331.2	50.8	9.6	41.2	B.	7.	29.4	6.8	22.6	.272	1.76	.192	1.568	1.	.448	3.552	.014	1.04	23.5	2.	......	?	216,000
7144	" 22	" 23	*	Much	M. F.2	......	865.2	468.	497.2	19.2	38.	11.2	B.	4.4	19.4	8.7	10.7	.288	.896	.256	.64	2.2	.76	1.44	.013	.84	18.5	2.	......	+	135,000
7190	" 29	" 30	*	"	M. F.06	......	482.	138.8	343.2	25.2	15.2	10.	B.	5.	15.8	7.	8.8	.256	.544	.208	.336	1.336	.536	.8	.016	.88	13.	8.	......	+	46.000
7248	Apr. 5	Apr. 6	*	"	M. F.04	......	748.	196.4	551.6	34.	10.	24.	B.	7.2	14.9	6.2	8.7	.176	.448	.224	.224	1.24	.536	.704	.02	.8	14.8	7.	......	+	49,000
7306	" 12	" 13	*	"	M. F.2	......	1241.6	235.2	1006.4	50.4	19.2	31.2	B.	8.	18.	6.6	11.4	.192	.8	.176	.624	2.04	.408	1.632	.018	.76	15.8	8.	......	+	64,000
7374	" 20	" 21	*	"	M. F.05	......	1517.2	440.4	1076.8	32.8	12.	20.8	B.	7.2	16.8	7.7	9.1	.064	.56	.112	.448	1.88	.352	1.528	.035	.52	....	....	......	....	....
....	....	....	..	....	....	......	......	.....	......	....	.....	....	......	.....	....	....	....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	....	......	....	....

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 78

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL,
University of Illinois.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 YARDS FROM MISSOURI SHORE, JEFFERSON BARRACKS, MO.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor.	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Loss on Ig'n: Tot'l	Loss on Ig'n: Dis-solv'd	Loss on Ig'n: Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dis-solved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dis-solved.	Organic Nitrogen: Sus-pended.	Nitrogen as: Nitrites.	Nitrogen as: Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6619	Jan. 4	Jan. 5	*	Cons'd	M. F.03	......	377.6	338.8	38.8	21.2	21.2	....	G.	23.8	11.1	8.	3.1	.7	.336	.176	.16	.84	.552	.288	.018	.72	1.	0.	......	+	16,200
6671	" 11	" 12	*	"	M. F.02	......	423.2	292.	131.2	26.	20.8	5.2	B.	20.2	9.2	7.	2.2	.132	.304	.112	.192	.72	.32	.4	.008	.36	2.5	0.	......	+	9,400
6710	" 18	" 19	*	Much	M. F.03	......	576.5	324.	252.5	20.	15.6	4.4	B.	23.2	11.4	7.1	4.3	.1	.336	.16	.176	.72	.416	.304	.005	.48	2.6	3.	......	+	51.600
6758	" 25	" 26	*	"	M. F.04	......	619.2	272.8	346.4	34.	17.6	16.4	B.	17.6	11.9	4.6	7.3	.104	.336	.128	.208	.8	.256	.544	.013	.68	5.9	4.	......	+	19.300
6824	Feb. 3	Feb. 5	*	Cons'd	M. F.03	......	411.2	312.8	98.4	28.	17.2	10.8	B.	19.4	7.9	6.4	1.5	.44	.24	.144	.096	.616	.352	.264	.013	.72	.6	0.	......	+	21,000
6875	" 9	" 10	*	Much	M. F.02	......	603.2	246.4	356.8	31.2	14.	17.2	B.	12.4	13.8	5.9	7.9	.272	.512	.192	.32	1.2	.288	.912	.011	.8	4.7	0.	......	....	69,000
6963	" 22	" 23	*	"	VM.F.	......	682.	216.	466.	50.	14.4	35.6	B.	12.6	13.5	6.6	6.9	.272	.528	.224	.304	1.12	.512	.608	.01	.96	6.4	0.	......	+	84.000
7008	Mar. 3	Mar. 5	*	Cons'd	M. F.03	......	514.4	321.2	193.2	41.2	18.8	22.4	B.	17.4	9.5	5.7	3.8	.08	.272	.208	.064	.88	.416	.464	.012	.88	6.2	0.	......	+	32,000
7045	" 8	" 9	§	V.M'ch	M. F.3	......	2746.4	149.6	2596.8	52.4	12.8	39.6	B.	6.	29.4	7.	22.4	.352	1.76	.192	1.568	4.	.32	3.68	.012	1.	14.	0.	......	+	134,000
7102	" 16	" 17	§	"	VM.F.1	......	2105.2	141.6	1963.6	60.8	14.	46.8	B.	7.4	29.	7.4	21.6	.24	1.12	.24	.88	3.2	.48	2.72	.015	1.	23.5	2.	......	?	320,000
7142	" 22	" 23	*	Much	M. F.25	......	1338.8	162.8	1176.	34.	12.	22.	B.	7.	22.2	6.2	16.	.32	1.024	.208	.816	2.36	.6	1.76	.016	.96	18.5	2.	......	+	106,000
7188	" 29	" 30	*	"	M. F.02	......	764.8	178.	586.8	31.6	12.4	19.2	B.	9.	16.	6.3	9.7	.224	.576	.224	.352	1.336	.504	.832	.018	.84	13.	8.	......	+	59,000
7246	Apr. 5	Apr. 6	*	"	M. F.30	......	1079.6	278.8	800.8	31.6	9.6	22.	B.	11.5	15.9	6.2	9.7	.144	.464	.16	.304	1.4	.376	1.024	.022	.72	14.8	7.	......	+	55,000
7307	" 12	" 13	*	"	M. F.05	......	1337.2	240.8	1096.4	38.4	20.4	18.	B.	9.2	17.1	5.6	11.5	.16	.768	.16	.608	2.04	.44	1.6	.018	.72	15.8	8.	......	+	84,000
7376	" 20	" 21	*	"	M. F.02	......	1614.8	227.2	1387.6	38.4	20.	18.4	B.	7.6	17.	5.1	11.9	.064	.608	.144	.464	1.96	.312	1.648	.035	.56	16.	12.	......	+	28,000

TURBIDITY—* Decided. § Very Decided. † Distinct. ‡ Very Slight. ‖ Slight. COLOR—M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 79 and 80.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ARTHUR W. PALMER,
T. J. BURRILL.
University of Illinois.

SOURCE OF WATER—ST. LOUIS, MISSOURI. TAP WATER. (Regulars and Extras.)

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Turbidity.	Appearance. Sediment.	Appearance. Color.	Odor.	Residue on Evaporation. Total.	Residue Dissolved.	Residue Suspended.	Loss on Ig'n. Tot'l	Loss on Ig'n. Dis-solv'd	Loss on Ig'n. Sus-pnd'd	Color on Ignition.	Chlorine.	Oxygen Consumed. Total.	By Dis-solved.	By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dis-solved.	Organic Nitrogen. Sus-pended.	Nitrogen as Nitrites.	Nitrogen as Nitrates.	Height of Water.	Temperature of Water, C.	Temperature of Air, Cent.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
6616	Jan. 4	Jan. 5	*	Little	M. F.03	......	350.4	321.2	29.2	29.6	26.4	3.2	G.	21.	6.4	6.4	0.0	.08	.192	.112	.08	.52	.328	.192	.007	.4	....	....	......	—	1,750
6674	.. 11	.. 12	*	Cons'd	M. F.03	......	357.6	328.	29.6	20.4	19.6	.8	B.	21.6	5.9	5.	.9	.072	.176	.128	.048	.48	.384	.096	.006	.28	....	....	......	—	3,350
6713	.. 18	.. 19	+	Little	M. F.04	......	347.2	332.4	14.8	30.4	27.2	3.2	B.	24.2	5.4	5.	.4	.012	.192	.112	.08	.448	.32	.118	.002	.32	....	....	......	—	4,200
6754	.. 25	.. 26	*	..	M. F.02	......	357.6	308.4	19.2	25.6	19.6	6.	B.	20.2	5.8	4.1	1.7	.016	.176	.144	.032	.48	.288	.192	.008	.36	....	....	......	+	2,575
6823	Feb. 3	Feb. 5	+	..	M. F.02	......	359.2	327.6	31.6	28.8	26.	2.8	B.	22.	5.3	4.9	.4	.02	.128	.112	.016	.32	.256	.061	.008	.56	....	....	......	—	12,450
6845	.. 6	.. 7	+	..	M. F.03	......	311.2	320.4	20.8	10.8	10.	.8	G.	22.2	4.4	4.1	.3	.064	.16	.128	.032	.416	.32	.096	.005	.64	....	....	......	....	....
6883	.. 12	.. 13	*	Cons'd	M. F.03	......	336.8	305.6	31.2	14.	13.2	.8	B.	18.	7.9	3.9	4.	.08	.176	.128	.048	.352	.256	.096	.012	.76	....	....	......	....	....
6900	.. 14	.. 15	*	..	M. F.05	......	326.	276.8	49.2	26.4	20.	6.4	B.	16.2	6.4	4.6	1.8	.08	.224	.112	.112	.56	.384	.176	.013	.76	....	....	......	....	....
6923	.. 16	.. 17	*	..	M. F.1	......	372.	271.2	100.8	21.8	16.8	8.	B.	15.6	6.2	4.9	1.3	.02	.176	.16	.016	.544	.288	.256	.008	.84	....	....	......	—	10,600
6960	.. 22	.. 23	+	Little	M. F.25	......	295.2	250.	15.2	17.2	16.	31.2	B.	15.4	6.3	6.2	.1	.032	.256	.208	.048	.576	.416	.16	.014	.84	....	....	......	—	6,000
7009	Mar. 3	Mar. 5	+	..	M. F.3	......	312.	244.	68.	21.	10.8	13.2	B.	13.	9.3	7.1	2.2	.064	.244	.224	.02	.72	.48	.24	.018	1.	....	....	......	—	8,100
7049	.. 8	.. 9	*	..	M. F.3	......	305.6	280.4	25.2	13.6	13.6	0.0	G.	14.6	8.4	6.8	1.6	.024	.24	.192	.048	.544	.448	.096	.013	.88	....	....	......	—	3,600
7066	.. 16	.. 17	*	..	M. F.5	......	316.4	226.8	89.6	23.2	11.2	12.	B.	9.8	11.	7.4	3.6	.064	.256	.144	.112	.8	.256	.544	.007	1.	....	....	......	—	9,750
7141	.. 22	.. 23	*	Cons'd	M. F.25	......	399.6	166.8	232.8	32.	13.2	18.8	B.	8.	13.4	6.	7.4	.02	.4	.176	.224	.92	.472	.448	.011	1.08	....	....	......	-	18,100
7192	.. 29	.. 30	*	Much	M. F.5	......	272.	165.2	106.8	22.8	14.	8.8	B.	6.6	8.9	7.1	1.8	.008	.272	.192	.08	.696	.536	.16	.012	1.08	....	....	......	—	9,100
7217	Apr. 5	Apr. 6	*	Cons'd	M. F.30	......	231.8	150.	81.8	18.8	5.6	13.2	B.	6.3	8.7	6.6	2.1	.02	.224	.176	.048	.6	.408	.192	.006	1.	....	....	......	—	5,300
7306	.. 12	.. 13	*	..	M. F.10	......	273.6	186.1	87.2	25.2	18.	7.2	B.	6.6	8.3	6.5	1.8	.008	.21	.208	.032	.76	.408	.352	.001	1.	....	....	......	+	6,400
7378	.. 19	.. 21	*	..	M. F.05	......	341.6	185.2	156.1	23.6	18.4	5.2	B.	6.8	9.	6.2	2.8	.016	.272	.208	.064	.824	.6	.224	.011	.88	....	....	......	—	4,000
7463	May 3	May 4	*	..	M. F.50	......	346.	234.2	111.8	24.4	19.6	4.8	B.	7.8	9.1	7.1	2.	.008	.21	.128	.112	.612	.324	.288	.005	.84	....	....	......	+	5,650
7507	.. 10	.. 11	+	..	M. F.50	......	451.2	212.	239.2	42.4	24.8	17.6	B.	7.7	11.7	6.5	5.2	.028	.272	.112	.16	1.22	.296	.924	.005	.8	....	....	......	—	4,000
7564	.. 17	.. 18	§	Much	M. F.	......	394.8	318.4	76.4	37.2	33.6	3.6	B.	7.9	12.7	8.3	4.4	.016	.32	.112	.208	.964	.452	.512	.003	.72	....	....	......	+	5,000
7610	.. 21	.. 25	§	Cons'd	M. F.	......	326.8	300.4	26.4	32.	18.	14.	B.	9.1	8.6	8.2	.4	.016	.16	.144	.016	.516	.292	.224	.003	.32	....	....	......	+	2,500
7628	.. 31	June 1	§	..	M. F.30	......	330.	261.6	68.4	40.4	39.6	.8	B.	9.2	8.	5.4	2.6	.02	.192	.176	.016	.548	.28	.268	.007	.68	....	....	......	+	14,350
7681	June 7	.. 8	†	..	M. F.04	......	407.6	264.4	143.2	26.	20.8	5.2	B.	9.6	8.2	5.5	2.7	.016	.208	.112	.096	.68	.308	.372	.006	.56	....	....	......	+	3,400
7721	.. 14	.. 15	*	..	M. F.03	......	352.4	257.6	94.8	20.4	20.4	....	B.	10.2	6.8	5.9	.9	.004	.128	.112	.016	.52	.388	.132	.004	.6	....	....	......	+	3,250
7766	.. 22	.. 23	*	..	M. F.	......	332.	286.8	45.2	53.6	47.2	6.4	B.	8.5	6.9	5.1	1.8	.022	.144	.08	.064	.292	.212	.08	.002	.4	....	....	......	....	1,600
7801	.. 28	.. 29	*	..	M. F.20	......	326.	255.6	70.4	26.	22.4	3.6	B.	8.2	6.7	5.6	1.1	.060	.16	.144	.016	.584	.244	.34	.002	.6	....	....	......	+	2,250
7844	July 5	July 6	*	V. Sl'ht	T.	......	318.8	215.6	103.2	40.	27.6	12.4	B.	7.4	6.3	6.1	.2	.014	.128	.112	.016	.26	.212	.018	.001	.44	....	....	......	—	1,150
7915	.. 12	.. 13	*	Little	T. F.03	......	286.	198.8	87.2	28.	25.2	2.8	B.	6.9	6.1	6.1	0.0	.032	.144	.096	.018	.324	.18	.111	.001	.52	....	....	......	+	2,200
7984	.. 19	.. 20	*	..	T. F.02	......	211.2	180.	61.2	22.	22.	0.0	B.	7.3	4.6	4.1	.5	.014	.16	.112	.048	.324	.212	.112	.001	.44	....	....	......	....	....
8033	.. 26	.. 27	‡	..	T. F.01	......	259.2	195.6	63.6	38.8	25.2	13.6	G.	7.9	5.	4.8	.2	.032	.176	.128	.048	.356	.26	.096	.001	.36	....	....	......	—	1,600
8085	Aug. 2	Aug. 3	*	..	T. F.02	......	290.8	176.	114.8	41.6	34.4	7.2	B.	7.3	5.8	4.6	1.2	.048	.16	.144	.016	.484	.228	.256	.001	.52	....	....	......	+	950
8194	.. 16	.. 17	*	..	T. F.02	......	275.6	198.	77.6	35.6	24.4	11.2	B.	9.4	5.5	4.8	.7	.034	.128	.112	.016	.388	.172	.216	.001	.68	....	....	......	—	3,000
8271	.. 23	.. 24	*	..	T. F.1	......	265.2	221.6	43.6	25.2	13.6	11.6	B.	10.8	4.6	4.	.6	.084	.16	.08	.08	.284	.204	.08	.002	.44	....	....	......	—	2,850
8337	.. 31	.. 31	*	..	M. F.05	......	312.4	208.4	104	21.8	23.2	1.6	DB.	12.3	7.	4.2	2.8	.050	.21	.....	.....	.41	.3	.14	...	.68	....	....	......	-	1,000
8409	Sept. 6	Sept. 8	*	Much	M. F.2	......	324.	206.4	117.6	21.8	13.6	11.2	B.	14.2	7.4	5.2	2.2	.100	.192	.176	.016	.46	.....	.....	.001	.36	....	....	......	....	....
8460	.. 13	.. 14	*	Cons'd	M. F.02	......	309.2	206.4	102.8	20.4	15.6	4.8	B.	14.2	6.6	6.1	.5	.056	.16	.128	.032	.376	.352	.024	.002	.18	....	....	......	+	1,450
8515	.. 20	.. 22	*	Little	M. F.15	......	268.	232.4	35.6	22.8	19.6	3.2	B.	10.6	6.5	6.3	.2	.108	.224	.192	.032	.344	.....		.002	.52	....	....	......	....	....
8568	.. 27	.. 29	*	Cons'd	M.	......	308.	252.	56.	26.4	17.6	8.8	B.	12.8	7.5	7.	.5	.051	.192	.....	.....	.636	.....	.252	.003	.6	....	....	......	+	18,800
8624	Oct. 1	Oct. 6	*	..	M. F.4	......	412.4	220.1	192.	30.	15.6	14.1	B.	11.	11.5	7.7	3.8	.076	.304	.192	.112	.864	.236	.628	.003	.63	....	....	......	?	7,400

TURBIDITY—*Decided. § Very Decided. + Distinct. ‡ Very Slight. | Slight. COLOR: M., Muddy. VM., Very Muddy. T., Turbid. C., Cloudy.

COLOR ON IGNITION—G., Gray. B., Brown. DB., Dark Brown. LB., Light Brown. RB., Reddish Brown. BG., Brownish Gray. Bh., Brownish. R., Red. Rh., Reddish. W., White.

TABLE 81.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, BRIDGEPORT, ILL.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
9	May 27	May 27	Much	V. Little	....	Gassy	582.	500.	82.	98.	41.9	28.2	13.7	25.	3.	1.4	1.6	....	....	....	.....	.....	.....	.....	.....	......	....
24	June 11	June 11	"	V. Much	....	"	754.4	640.8	113.6	130.	51.2	14.8	36.4	16.	5.	2.4	2.6	....	....	....	.....	.....	.....	.....	.....	......	....
34	" 16	" 17	"	"	....	"	740.	644.	96.	160.	52.4	32.6	19.8	15.	3.2	2.2	1.	....	....	....	.....	.....	.....	.....	.....	......	....
68	" 29	" 29	Decided	Little	....	"	1165.	814.	351.	237.	32.1	28.	4.1	29.4	3.5	2.	1.5	....	....	....	.0	.2	4.5	8.	13.	......	1,310,000
231	July 3	July 3	Much	Cons'd	.6	"	492.	387.3	104.8	78.1	27.	11.2	15.8	14.	2.2	2.	.2	....	....	....	.001	....	5.3	14.	21.	......	225,000
269	" 10	" 10	Decided	Little	.6	"	544.	505.6	38.4	128.	28.2	15.	13.2	14.6	......	......	......	....	....	....	.0	.3	4.9	16.	21.	......	145,000
308	" 17	" 17	"	Cons'd	.5	"	650.4	568.	182.4	97.	19.	12.6	6.4	9.6	1.4	.592	.808	....	....	....	.38	.87	7.	17.	21.	......	1,415,000
343	" 21	" 25	Much	"	.5	"	536.	490.	46.	112.	28.8	19.8	9.	15.	1.8	1.	.8	....	....	....	.0	.35	5.4	23.	27.	......	1,070,000
378	" 31	" 31	"	....	.4	"	442.	368.	74.	75.	34.4	15.	19.4	10.2	2.2	1.24	.96	....	....	....	.0	.0	4.7	10.	24.	......	....
416	Aug. 6	Aug. 7	"	Cons'd	.3	"	416.	344.	72.	76.	27.8	13.5	14.3	11.6	1.76	1.08	.68	....	....	...	.0	.15	5.5	19.	24.	......	515,000
531	" 28	" 30	"	"	Muddy	"	468.	436.	32.	116.	35.7	15.4	20.3	15.8	2.	1.32	.68	....	....	....	.0	.0	4.2	19.	21.	......	....
606	Sept. 11	Sept. 12	"	Much	"	"	512.	438.	74.	117.	29.	16.2	12.8	16.2	2.5	.96	1.54	....	....	....	.0	.2	5.	12.	19.	......	950,000
639	" 18	" 19	"	"	"	"	502.	484	18.	121.	29.8	19.3	10.5	20.	2.6	1.12	2.48	....	....	....	.0	.0	5.	9.	15.	......	540,000
680	" 25	" 26	"	"	"	"	710.	610.	100.	161.	38.3	25.	13.3	20.	2.6	1.88	.72	.. .	....	....	.0	.5	5.2	13.	19.	......	1,190,000
717	Oct. 2	Oct. 3	"	Little	.4	"	504.	450.	54.	108.	27.3	9.8	17.5	14.2	1.9	.86	1.04	....	....	....	.0	.0	4.7	13.	10.	......	1,370,000
759	" 9	" 10	"	Cons'd	Muddy	"	377.	325.	52.	74.	19.2	9.	10.2	9.	1.5	.66	.84	....	....	....	.0	.0	5.6	10.5	18.	......	600,000
791	" 16	" 17	"	Little	.3	"	567.	494.	73.	151.	29.	14.	15.	20.	2.4	1.02	1.38	....	....	....	.0	.0	5.6	8.	10.	......	....
830	" 23	" 24	"	Much	.4	"	420.	380.	40.	100.	27.3	11.	16.3	13.	3.3	.88	2.42	....	....	....	.0	.15	5.	10.	20.	......	....
871	" 30	" 31	"	"	.4	"	481.	420.	61.	99.	29.4	12.8	16.6	13.2	1.9	.66	1.24	....	....	....	.002	.0	5.5	10.	10.	......	1,360,000
912	Nov. 6	Nov. 6	"	Little	.4	"	408.	374.	34.	74.	23.8	9.4	13.4	9.4	2.2	.91	1.26	....	....	....	.0	.025	5.6	9.	11.	......	1,700,000
942	" 13	" 13	"	"	Muddy	"	562.	472.	90.	126.	33.2	12.8	20.4	16.8	......	......	......	....	....	....	.0	.35	5.	6.5	1.	......	1,850,000
980	" 20	" 21	"	"	"	"	683.	576.	107.	156.	40.4	15.	25.4	18.2	3.4	1.2	2.2	....	....	....	.0	.0	5.	5.5	10.	......	2,650,000
1009	" 27	" 28	"	Much	"	"	530.	432.	98.	106.	29.2	10.2	19.	15.	2.6	1.04	1.56	....	...	....	.0	.0	5.	10.	3.	......	1,680,000
1040	Dec. 4	Dec. 6	"	Little	"	"	452.	454.	18.	102.	26.5	23.	3.5	15.2	12.	1.06	.14	....	....	....	.014	.336	5.	8.	4.	......	....
1070	" 11	" 12	"	Cons'd	"	"	534.	463.	69.	135.	16.	7.	9.	16.4	3.2	1.3	1.9	....	....	....	.0	.0	5.	9.	14.	......	630,000
1107	" 18	" 22	"	"	"	"	504.	466.	38.	118.	26.8	12.4	14.4	15.	2.7	.8	1.9	....	....	....	.0	.05	5.	9.	3.	......	970,000
1141	" 25	" 27	"	"	"	"	602.	534.	68.	166.	33.8	17.	16.8	20.	5.	1.74	3.26	....	....	....	.0	.35	4.	6.5	—8.	......	3,190,000

TABLE 82.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN,
University of Chicago.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL. LOCKPORT, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Susp'd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
20	May 5	May 9	Much	Much	....	Gassy	630.	530.	100.	93.9	51.	16.6	34.4	16.	3.6	2.	1.6	....	....	....	.0	.1	......	......	......	......	....
47	" 22	" 22	Distinct	"	....	"	677.	558.	119.	98.	59.8	24.2	35.6	14.5	2.9	1.7	1.2	....	....	....	.0	.25	......	......	......	......	1,115,000
70	" 29	" 31	Decided	"	.4	"	832.	668.8	163.2	184.	41.6	25.1	16.5	19.	3.	1.52	1.48	....	....	....	.0	.4	......	......	24.	......	1,055,000
98	June 5	June 6	Much	Cons'd	.5	"	763.2	640.	123.2	132.	41.2	27.	14.2	16.	1.6	1.36	.24	....	....	....	.0	.0	......	......	32.	......	360,000
130	" 12	" 13	Decided	"	.4	"	630.4	504.8	125.6	101.	39.	22.9	16.1	16.	3.36	1.72	1.64	....	....	....	.005	.45	......	......	28.	......	1,230,000
162	" 19	" 20	"	"	.6	"	632.	572.	160.	121.	39.4	28.3	11.1	19.9	3.2	1.4	1.8	....	....	....	.0	.9	......	24.	29.	......	300,000
204	" 26	" 27	Much	"	.4	"	584.	472.	112.	103.	36.3	21.4	14.9	16.	2.96	1.36	1.6	....	....	....	.0	.5	......	21.	27.	......	570,000
235	July 3	July 4	"	"	.5	"	554.4	446.4	108.	105.	29.6	11.6	18.	15.	2.8	2.4	.4	....	....	....	.002	.4	......	22.	31.	......	180,000
272	" 10	" 11	Decided	"	.2	"	520.4	478.4	42.	101.	27.8	13.9	13.9	13.	2.16	1.4	.76	....	....	....	.0	.0	......	21.	27.	......	185,000
309	" 17	" 18	"	Little	.7	"	576.	508.	68.	119.5	18.	12.2	5.8	7.3	......	......	......	....	....	....	.032	.12	......	22.	29.	......	935,000
344	" 24	" 25	Much	Cons'd	.5	"	560.	464.	96.	106.	28.6	20.1	8.5	14.8	2.	1.2	.8	....	....	....	.0	.25	......	24.	29.	......	520,000
382	" 31	Aug. 1	"	"	.2	"	484.	456.	28.	108.	18.4	12.5	5.9	13.	2.48	2.	.48	....	....	....	.0	.0	......	22.	29.	......	1,210,000
417	Aug. 7	" 9	"	"	.3	"	523.	512.	11.	135.	....	....	....	16.8	......	......	......	....	....	....	.0	.15	......	21.	27.	......	100,000
456	" 14	" 15	"	"	Muddy	"	......	......	......	118.	34.4	22.6	11.8	16.	2.32	1.36	.96	....	....	....	.0	.05	......	......	......	......	....
497	" 21	" 22	"	"	"	"	511.	488.	63.	109.	29.4	21.8	7.6	14.	1.44	1.28	.16	....	....	....	.0025	.0	......	22.5	31.	......	95,000
526	" 28	" 29	"	"	.3	"	551.	473.	81.	123.	38.	17.1	20.9	17.4	1.64	.84	.80	....	....	....	.0	.0	......	24.	29.	......	40,000
570	Sept. 4	Sept. 5	"	"	Muddy	"	447.	419.	28.	105.	26.7	18.	8.7	14.2	1.88	1.32	.56	....	....	....	.001	.004	......	23.	29.	......	80,000
608	" 11	" 12	"	Much	"	"	532.	473.	59.	130.	29.6	16.2	13.4	20.	2.32	1.04	1.28	....	....	....	.0	.25	......	18.	26.	......	920,000
641	" 18	" 19	"	"	"	"	504.	434.	70.	110.	28.2	18.5	9.7	16.6	1.84	1.08	.76	....	....	....	.0	.15	......	20.	21.	......	260,000
682	" 25	" 26	"	"	.3	"	566.	490.	76.	132.	24.9	17.	7.9	22.	2.32	1.24	1.08	....	....	....	.0	.25	......	15.5	20.	......	220,000
722	Oct. 2	Oct. 3	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	....	......	......	......	......	740,000
764	" 9	" 10	Much	Little	Muddy	Gassy	444.	370.	74.	90.	23.6	15.	8.6	13.6	1.72	1.	.72	....	....	....	.002	.5	1.	20.	21.	......	....
792	" 16	" 17	"	Cons'd	.3	"	437.	373.	64.	91.	27.4	14.	13.4	14.4	1.72	.68	1.04	....	....	....	.0	.35	1.	14.	24.	......	310,000
832	" 23	" 24	"	Much	Muddy	"	504.	443.	61.	115.	29.8	16.2	13.6	15.	2.92	1.	1.92	....	....	....	.0	.0	......	18.	23.	......	300,000
876	" 30	" 31	"	"	.5	"	506.	488.	18.	110.	36.	20.4	15.6	12.5	2.76	1.12	1.64	....	....	....	.0	.025	......	12.	18.	......	690,000
914	Nov. 6	Nov. 7	"	"	.4	"	......	......	......	120.	33.4	14.8	19.6	15.6	2.16	.72	1.44	....	....	....	.0	.0	......	9.	18.	......	1,040,000
951	" 13	" 14	"	"	Muddy	"	530.	448.	82.	121.	27.4	12.5	14.9	18.	1.72	.68	1.04	....	....	....	.0	.35	......	10.	......	......	2,060,000
982	" 20	" 21	"	"	"	"	580.	502.	78.	128.	40.6	15.8	24.8	16.6	2.88	1.24	1.64	....	....	....	.0	.00	......	12.	18.	......	1,340,000
1011	" 27	" 28	"	Little	.42	"	497.	456.	41.	130.	28.	14.	14.	18.6	2.2	1.24	.96	....	....	....	.0	.0	......	9.	18.	......	510,000
1042	Dec. 4	Dec. 5	"	Much	Muddy	"	548.	447.	101.	114.5	34.6	9.8	24.8	16.4	2.6	.24	1.36	....	....	....	.0	.05	......	......	......	......	350,000
1072	" 11	" 12	"	"	"	"	490.	426.	64.	114.	14.	7.8	6.2	15.6	2.56	1.84	.72	....	....	....	.0	.0	......	10.	18.	......	650,000
1109	" 18	" 19	"	Little	"	"	552.	508.	44.	114.	28.6	18.	10.6	15.	3.2	1.04	2.16	....	....	....	.0	.1	......	8.	4.	......	510,000
1146	" 26	" 28	"	Cons'd	"	"	552.	504.	48.	178.	28.	18.2	11.8	15.4	3.4	1.76	1.64	....	....	....	.014	.031	1.	17.	— 7.	......	1,650,000

TABLE 83.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—DESPLAINES RIVER, LOCKPORT, ILL.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
19	May 5	May 9	Slight	V. Little	....	None	.....	.....	.....	......	14.5	13.8	.7	.1	.52	.48	.04	....	....	....	.0	.0	......	......	......	......	....
48	" 22	" 22	"	Little	....	"	400.	370.	30.	3.4	17.8	16.5	1.3	.046	.47	.436	.034	....	....	....	.024	.176	......	......	......	......	4,500
71	" 29	" 31	"	"	.2	"	369.6	324.	45.6	2.7	16.1	14.7	1.7	.123	.48	.424	.056	....	....	....	.036	.464	18.36	......	24.	......	3,600
99	June 5	June 6	Distinct	"	.5	"	444.	274.4	169.6	2.8	15.2	14.3	.9	.076	.44	.4	.04	....	....	....	.064	.336	17.9	......	32.	......	6,950
131	" 12	" 13	None	"	.8	"	382.	360.	22.4	3.55	14.3	13 9	.4	.12	.76	.52	.24	....	....	....	.028	.422	18.7	......	28.	......	4,200
163	" 19	" 20	Distinct	"	.5	"	389.6	382.4	7.2	4.	15.7	15.1	.6	.076	.64	.56	.8	....	....	....	.0075	.0	1.	20.	29.	......	4,500
205	" 26	" 27	"	"	.3	"	388.8	365.6	23.2	4.	9.8	6.4	3.4	.064	.576	.52	.056	....	....	....	.0	.025	1.	24.	31.	......	1,250
236	July 3	July 3	None	"	.5	"	378.4	374.	4.4	4.9	9.1	6.4	2.7	.086	.584	.58	.004	....	....	....	.003	.247	......	25.	29.	......	6.300
273	" 10	" 11	Distinct	"	.5	"	357.6	338.4	19.2	4.9	7.4	5.7	1.7	.064	.496	.496	.0	....	....	....	.014	.0	1.	24.	27.	......	6,500
310	" 17	" 18	Decided	"	.7	"	276.8	196.	80.8	3.65	13.6	4.7	8.9	.122	.48	.36	.12	....	....	....	.042	.508	2.4	24.	29.	......	5.200
345	" 24	" 26	Slight	"	.5	"	309.	305.	4.	7.7	9.	6.5	2.5	.106	.48	.48	.0	....	....	....	.002	.0	1.	26.	29.	......	11,650
383	" 31	Aug. 1	"	V. Little	.3	"	332.	328.	4.	5.5	8.6	5.7	2.9	.088	.48	.424	.056	....	....	....	.006	.019	1.	23.	27.	......	8,150
418	Aug. 7	" 9	Decided	"	.3	"	347.	347.	0.	6.6	13.	10.	3.	.096	.464	.432	.032	....	....	....	.005	.0	1.	23.	27.	......	4.750
457	" 14	" 15	Slight	Little	.4	"	320.	302.	18.	7.2	9.2	6.2	3.	.04	.472	.416	.056	....	....	...	.004	.0	......	......	......	......	....
498	" 21	" 23	None	V. Little	.1	"	344.	344.	0.	10.2	9.2	6.9	2.3	.062	.408	.408	.0	....	....	....	.002	.023	1.2	24.	29.	......	2,300
527	" 28	" 29	Slight	Cons'd	.2	"	331.	320.	11.	9.3	14.	12.4	1.6	.046	.472	.472	.0	....	....	....	.005	.045	1.	25.	29.	......	44,100
571	Sept. 4	Sept. 5	Decided	Little	.2	"	321.	321.	3.	7.4	9.3	9.2	.1	.086	.472	.472	.0	....	....	....	.0074	.0	1.	21.	29.	......	2.400
609	" 11	" 13	Slight	V. Little	.2	"	320.	301.	19.	8.	12.8	12.4	.4	.088	.544	.408	.136	....	....	....	.04	.11	......	20.	26.	......	9,800
642	" 18	" 19	Much	Little	.3	"	290.	286.	4.	7.8	12.8	12.	.8	.054	.512	.448	.064	....	....	....	.006	.374	......	18.	21.	......	19.000
683	" 25	" 26	Slight	V. Little	.2	"	320.	300.	20.	7.2	8.5	8.4	.1	.084	.352	.328	.024	....	....	....	.0	.15	......	15.5	20.	......	2.800
723	Oct. 2	Oct. 4	Decided	"	.3	"	324.	320.	4.	7.2	8.6	8.4	.2	.022	.328	.28	.048	....	....	....	.002	.05	......	12.	24.	......	16,400
765	" 9	" 10	....	....	....	....	.....	.....	.....	......	....	....	....	......	......	......	......	....	....	....	......	......	......	......	......	....	4.000
793	" 16	" 17	Decided	Little	.3	None	363.	350.	13.	8.6	8.8	8.4	.4	.044	.352	.328	.024	....	....	....	.0	.15	1.	20.	24.	......	8,400
833	" 23	" 24	"	"	.25	"	360.	358.	2.	7.4	8.1	7.5	.6	.056	.288	.272	.016	....	....	....	.002	.0	1.	20.	23.	......	11,400
877	" 30	" 31	Slight	V. Little	.3	"	418.	416.	2.	8.1	7.8	7.4	.4	.016	.272	.256	.016	....	....	....	.0	.05	1.4	14.	18.	......	6.500
915	Nov. 6	Nov. 7	Distinct	"	.25	"	436.	424.	12.	11.2	8.	7.4	.6	.022	.352	.256	.096	....	....	....	.001	.2	1.	9.	20.	......	8,700
952	" 13	" 14	Slight	"	.5	"	450.	444.	6.	12.8	8.	8.	.0	.042	.304	.192	.112	....	....	....	.0098	.34	1.	8.	......	......	3,400
983	" 20	" 21	Much	Little	.3	"	454.	450.	4.	15.6	6.8	6.	.8	.02	.64	.44	.2	....	....	....	.004	.35	......	11.	18.	......	....
1012	" 27	" 28	Slight	V. Little	.5	"	453.	448.	5.	18.1	5.8	5.8	.0	.016	.208	.208	.0	....	....	....	.0075	.2	......	8.	18.	......	3,500
1043	Dec. 4	Dec. 5	Much	"	.15	"	416.	414.	2.	13.8	5.3	5.3	.0	.048	.184	.184	.0	....	....	....	.0	.2	......	0.	......	......	....
1073	" 11	" 13	Slight	"	.3	"	344.	340.	4.	8.9	2.1	1.8	.3	.06	.2	.2	.0	....	....	....	.004	.1	1.	9.	18.	......	12,900
1110	" 18	" 22	"	"	.25	"	434.	432.	2.	10.9	6.8	6.8	.0	.106	.256	.184	.072	....	....	....	.007	.5	......	9.	4.	......	34,000
1147	" 26	" 28	Much	Much	.35	"	424.	420.	4.	10.7	6.4	6.2	.2	.222	.344	.248	.096	....	....	....	.01	.3	1.	6.	—8.	......	....

TABLE 84.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION. Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—DESPLAINES RIVER, NORTH OF JACKSON ST., JOLIET, ILL.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
17	May 4	May 1	Decided	Much	....	Gassy	540.	456.	84.	70.	24.8	16.7	8.1	12.	1.8	1.	.8	....	....	.0	.0	.0	......	......	......	......	....
45	" 23	" 23	Distinct	"	....	"	552.	482.	70.	65.	56.2	31.4	24.8	8.	2.4	1.5	.9	....	....	....	.0	.0	......	......	......	......	390,000
60	" 29	" 29	"	Little	....	"	580.	482.4	97.6	73.	29.7	27.5	2.2	8.4	2.	1.	1.	....	....	....	.008	0	......	......	......	......	230,000
90	June 5	June 5	Decided	"	.8	"	468.	423.6	44.4	48.	18.8	15.8	3.	6.6	1.44	.752	.688	....	....	....	.15	.0	......	......	......	......	530,000
126	" 12	" 12	"	Cons'd	.8	"	568.	538.4	29.6	92.	26.8	18.2	8.6	13.5	2.8	1.46	.34	....	....	....	.0	.25	......	......	......	......	1,620,000
159	" 19	" 19	"	"	.6	"	592.	549.6	42.4	113.	29.6	19.6	10.	16.	2.4	1.7	.7	....	....	....	.004	.55	......	21.	21.	......	280,000
201	" 26	" 27	Much	"	.4	"	495.2	451.2	44.	90.	27.2	14.4	13.8	15.	2.04	1.52	.52	....	....	....	.0	.025	......	21.	21.	......	590,000
237	July 3	July 3	Decided	Little	.3	"	531.2	480.8	50.4	112.	14.6	10.8	3.8	15.	2.6	1.36	1.24	....	....	....	.002	.25	......	22.	24.	......	135,000
267	" 10	" 10	"	"	.6	"	572.	545.4	26.6	107.	25.2	13.5	11.7	13.	2.96	1.04	1.92	....	....	....	.0	.4	......	21.5	19.	......	115,000
304	" 17	" 17	"	"	.5	"	537.6	396.	111.6	80.	16.8	15.	1.8	7.	1.56	.86	.70	....	....	....	.034	.0	......	21.	19.	......	575,000
339	" 21	" 21	Much	"	.5	"	572.	505.	67.	90.	18.2	12.8	5.4	12.	1.64	1.22	.42	....	....	....	.0	.0	......	23.	23.	......	60,000
379	" 31	" 31	"	"	.2	"	516.	481.	32.	105.	24.6	14.1	10.5	13.6	2.12	1.2	.92	....	....	....	.0	.0	......	22	15.	......	20,000
413	Aug. 7	Aug. 7	"	Cons'd	Muddy	"	574.	506.	68.	103.5	26.	14.1	11.9	22.	1.92	1.48	.44	....	...	....	.0	.85	......	21.	10.5	......	70,000
453	" 14	" 15	"	Little	.3	"	540.	162.	78.	102.	25.9	13.2	12.7	23.2	2.	1.1	.9	....	....	....	.0	.0	......	20.	15.	......	....
491	" 21	" 23	"	"	.1	"	498.	445.	53.	104.	18.4	13.	5.4	18.2	1.58	.82	.76	....	....	....	.0025	.1475	......	24.	16.	......	305,000
524	" 28	" 29	"	"	.4	"	526.	466.	60.	112.	25.	13.	12.	18.	2.08	.64	1.44	....	...	....	.0	.5	......	22.	18.	......	400,000
572	Sept. 4	Sept. 5	"	"	.2	"	510.	466.	44.	116.	19.	12.2	6.8	20.	1.84	.58	1.26	....	....	....	.005	.0	......	20.	15.	......	140,000
604	" 11	" 12	"	Cons'd	.2	"	190.	150.	40.	114.	25.	15.3	9.7	15.2	1.64	.92	.72	...	....	....	.0	.0	......	11	17.	......	600,000
637	" 18	" 18	"	Little	.4	"	460.	434.	26.	107.	25.3	14.8	10.5	18.6	1.88	.84	1.04	....	....	....	.0	.0	......	18.	12.	......	90,000
679	" 25	" 25	"	V. Little	.8	"	677.	488.	189.	121.	26.1	15.2	10.9	17.8	1.81	.6	1.24	....	...	....	.0	.15	......	15.	9.	......	230,000
756	Oct. 2	Oct. 7	"	"	.1	"	566.	528.	38.	128.	19.1	12.8	6.6	17.2	.....	......	......	....	....	....	.002	.3	......	11.	9.	......	....
801	" 16	" 17	"	Little	.4	"	148.	406.	42.	92.	22.	13.1	8.6	12.4	1.4	.84	.56	....	....	....	.007	0	......	20	16.	......	590,000
834	" 23	" 25	"	"	.3	"	482.	448.	34	109.	26.8	12.7	11.1	15.6	2.12	.88	1.54	...	....	....	.0	.0	......	13.	17	......	630,000
878	" 30	" 31	"	Much	4	"	572.	387.	185.	127.	25.	13.	12.	15.	2.52	.68	1.81	....	....	....	.0	.025	......	0.	2.	......	450,000
916	Nov. 6	Nov. 7	"	Cons'd	.5	"	598.	572.	26.	139.	22.5	13.8	8.7	11.8	2.56	.9	1.66	....	....	....	.0016	.0	......	1.	6.	......	....
952	" 13	" 14	"	Much	.1	"	628.	473.	155.	112.	26.6	8.7	17.9	14.1	1.72	.3	1.42	...	....	...	.004	.35	...	6	3.	......	870,000
984	" 20	" 21	"	"	.3	"	761.	574.	190.	114.	35.2	9.4	25.8	17.	3.28	.76	2.52	....	....	....	.0	.0	....	8.	0.	......	1,310,000
1013	" 27	" 28	"	"	.35	"	620.	474.	146.	118.	28.2	17.6	10.6	11.6	1.92	.62	1.3	....	....	....	.0	.0	....	8.	-2.	......	770,000
1044	Dec. 4	Dec. 5	"	"	.4	"	650.	466.	184.	112.	25.5	10.1	15.4	12.4	2.2	.9	1.3	....	....	....	.006	.05	...	2.	10.	......	670,000
1074	" 11	" 13	"	"	.35	"	584.	451.	130.	98.	23.2	8.9	14.3	13.6	2.72	.74	1.98	....	....	....	.0	.0	.....	1.5	11.	......	620,000
1111	" 18	" 19	"	Cons'd	Muddy	"	630.	556.	74.	130.	27.6	9.	18.6	16.	2.2	.58	1.62	....	....	....	.0	.05	......	9.	10.	......	490,000
1143	" 26	" 27	"	"	.4	"	612.	516.	96.	120.	25.9	11.2	11.7	16.	3.4	1.48	1.92	....	....	....	.0	.0	...	10.	15.	......	840,000

TABLE 85.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.

SOURCE OF WATER—DESPLAINES RIVER, SOUTH OF TOWN, JOLIET, ILL.

University of Chicago.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
18	May 4	May 4	Decided	Much	....	Gassy	560.	454.	106.	60.2	22.2	15.7	6.5	7.75	2.2	1.2	1.	....	....	....	.0	.0	......	......	......	......	....
46	" 23	" 23	Distinct	"	....	"	566.	480.	86.	65.	42.3	25.9	16.4	7.6	2.6	1.	1.6	....	....	....	.019	.0	......	......	......	......	654.600
67	" 29	" 29	"	Little	....	"	712.8	484.8	228.	74.	33.5	17.2	16.3	8.	3.	1.	2.	....	....	....	.019	.0	......	......	......	......	610.000
97	June 5	June 5	Decided	Cons'd	.4	"	722.4	416.	306.4	48.	28.2	14.5	13.7	6.2	1.7	.704	.996	....	....	....	.064	.0	......	......	......	......	850.000
127	" 12	" 12	"	"	.8	"	584.	532.	52.	94.	27.5	19.3	8.2	14.	2.8	1.4	1.4	....	....	....	.02	.2	......	......	......	......	760.000
160	" 19	" 19	"	"	Muddy	"	622.8	568.	54.8	112.	28.1	24.8	3.3	16.	3.12	2.2	1.1	....	....	....	.036	.4	......	19.	......	......	530.000
202	" 26	" 26	Much	"	.4	"	504.	452.	152.	87.	25.8	13.6	12.2	12.	2.96	1.06	1.9	....	....	....	.0	.15	......	21.	26.	......	180.000
238	July 3	July 3	Decided	Little	.3	"	509.2	455.2	54.	113.	19.4	6.4	13.	16.	2.4	1.4	1.	....	....	....	.001	.0	......	22.5	24.	......	1.760.000
268	" 10	" 10	"	"	.6	"	597.6	532.8	64.8	100.	25.5	12.8	12.7	12.	2.96	1.02	1.94	....	....	....	.0	.0	......	21.	19.	......	120.000
305	" 17	" 17	"	"	.5	"	565.6	407.2	158.4	825.	15.8	15.2	.6	4.68	1.52	.68	.84	....	....	....	.044	.0	......	22.	19.	......	830.000
340	" 24	" 24	Much	"	.5	"	617.	503.	114.	90.	18.6	11.8	6.8	13.2	1.84	1.24	.60	....	....	....	.0	.0	......	25.	23.	......	170.000
380	" 31	" 31	"	Cons'd	.2	"	586.	482.	104.	102.	27.8	13.	14.8	13.6	2.08	1.1	.98	....	....	....	.0	.025	......	22.	18.	......	355.000
414	Aug. 7	Aug. 7	"	"	.1	"	692.	542.	150.	134.75	28.6	12.	16.6	21.	2.72	1.26	1.46	....	....	....	.0	.05	......	26.	18.	......	390.000
454	" 14	" 14	Decided	Little	.4	"	546.	526.	20.	111.	24.4	13.	11.4	14.8	2.2	1.1	1.1	....	....	....	.0	.0	......	22.	17.	......	....
495	" 21	" 21	Much	Cons'd	.1	"	662.	502.	160.	115.5	28.5	12.2	16.3	11.6	2.04	1.	1.04	....	....	....	.003	.025	......	23.	18.	......	2.515.000
525	" 28	" 28	"	"	.2	"	660.	502.	158.	117.	27.6	8.4	9.2	14.6	2.12	......	......	....	....	....	.0	.0	......	23.	18.	......	370.000
573	Sept. 4	Sept. 5	"	"	.2	"	583.	526.	57.	128.	18.4	10.6	7.8	16.2	1.6	.34	1.26	....	....	....	.0	.005	......	22.	17.	......	2,540.000
605	" 11	" 12	"	"	.2	"	478.	438.	40.	112.	20.	14.	12.	16.2	1.68	.98	.7	....	....	....	.0	.4	......	17.	12.	......	280.000
638	" 18	" 18	"	Little	.4	"	484.	444.	40.	109.	25.9	14.8	11.1	18.4	1.8	.88	.92	....	....	....	.0	.0	......	18.	11.5	......	120.000

TABLE 86.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—KANKAKEE RIVER, WILMINGTON, ILL.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Sus. pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
100	June 5	June 6	Distinct	Little	.5	None	309.6	267.6	42.	1.8	14.5	14.2	.3	......	.36	.336	.024	....	....	....	.032	1.093	3.	......	......	......	4,700
128	" 12	" 12	None	"	1.2	"	313.8	290.4	23.4	1.65	17.8	17.	.8	.085	.64	.64	.0	....	....	....	.0082	1.2	2.5	......	21.	......	3,500
161	" 19	" 19	Distinct	"	.8	"	300.	298.4	1.6	1.65	16.6	16.4	.2	.082	.624	.6	.024	....	....	....	.028	.4	1.5	24.	26.	......	7.650
203	" 26	" 26	Decided	"	.4	"	332.	297.2	34.8	......	14.8	11.4	3.4	.07	.6	.52	.08	....	....	....	.005	.05	1.	24.	21.	......	2,800
239	July 3	July 3	None	"	.4	"	290.	260.8	29.2	2.	7.7	5.3	2.4	.082	.312	.31	.002	....	....	....	.008	.5	.833	25.	22.	......	2,200
271	" 10	" 10	Distinct	"	.4	"	......	......	......	2.4	8.6	5.1	3.5	.074	.56	.288	.272	....	....	....	.0	.3	1.	23.	18.	......	1.900
306	" 17	" 17	Decided	"	.3	"	359.6	304.	55.6	3.3	7.	3.8	3.2	.112	.432	.424	.008	....	....	....	.06	2.575	1.6	22.	18.	......	5.900
341	" 24	" 24	None	"	Muddy	"	341.	266.	78.	3.8	7.4	4.2	3.2	.064	.408	.368	.040	....	....	....	.006	.0	1.3	27.	26.	......	2,100
381	" 31	" 31	Decided	"	.2	"	309.	258.	51.	3.4	8.6	5.2	3.4	.052	.416	.280	.136	....	....	....	.0	.025	1.3	24.	16.	......	4,250
415	Aug. 7	Aug. 7	Much	"	.2	"	332.	275.	57.	3.4	9.2	4.8	4.4	.05	.448	.44	.008	....	....	....	.005	.0	1.	22.	18.	......	1.850
455	" 14	" 14	Decided	"	.1	"	342.	242.	100.	3.7	8.4	5.	3.4	.08	.448	.272	.176	....	....	....	.006	.0	1.	22.	17.	......	......
490	" 21	" 21	Much	"	.0	"	310.	251.	59.	4.1	8.2	5.	3.2	.068	.376	.288	.088	....	....	....	.004	.025	1.	25.	22.	......	3,650
528	" 28	" 29	Decided	Cons'd	.0	"	324.	242.	82.	3.7	8.4	6.8	1.6	.076	.416	.280	.136	....	....	....	.004	.1	1.	25.	20.	......	2,600
566	Sept. 4	Sept. 5	Much	"	.0	"	300.	250.	50.	3.9	7.7	7.4	.3	.08	.352	.28	.072	....	....	....	.004	.025	1.	23.	17.	......	1,950
607	" 11	" 12	"	Little	.0	"	295.	231.	64.	4 6	7 6	6.6	1.	.04	.328	.248	.08	....	....	....	.001	.2	1.	19.	16.	......	1,400
640	" 18	" 19	"	"	.1	"	314.	239.	75.	3.9	8.	6.6	1.4	.058	.36	.24	.12	....	....	....	.002	.3	1.	20.	16.	......	15,600
684	" 25	" 26	Decided	"	.3	"	316.	252.	64.	4.9	6.8	6.6	.2	.048	.256	.24	.014	....	....	....	.0	.15	1.	11.	16.	......	4,100
718	Oct. 2	Oct. 2	"	V. Little	.3	"	262.	258.	4.	3.8	6.5	6.5	.0	.024	.....	......	......	....	....	....	.001	.05	.8	8.	10.	......	2,100
760	" 9	" 10	"	"	.2	"	276.	251.	25.	3.8	6.2	5.2	1.	.04	.248	.16	.088	....	....	....	.0	.05	1.	13.	7.	......	1.700
794	" 16	" 17	"	Little	.2	"	285.	258.	27.	3.8	6.	4 3	1.7	.044	.232	.136	.096	....	....	....	.0	.0	1.	19.	19.	......	1,500
831	" 23	" 23	"	"	.2	"	280.	256.	24.	4.6	5.5	4.6	.9	.016	.264	.168	.096	....	....	....	.0	.2	1.	14.	18.	......	4,600
875	" 30	" 30	Slight	V. Little	.2	"	260.	248.	12.	3.8	4.6	4.	.6	.03	.184	.128	.056	....	....	....	.0	.0	1.	10.	17.	......	4,000
913	Nov. 6	Nov. 6	"	"	.25	"	277.	275.	2.	4.2	6.	5.2	.8	.012	.186	.178	.008	....	....	....	.0024	.25	1.2	5	1.	......	2.100
943	" 13	" 13	Distinct	Little	.3	"	326.	290.	36.	3.6	8.2	7.4	.8	.058	.216	.2	.016	....	....	....	.028	1.9	1.5	5.	7.	......	6.900
981	" 20	" 20	Much	"	.3	"	316.	312.	4.	2.6	8.5	8.4	.1	.024	.256	.192	.064	....	....	....	.02	1.65	1.8	8.	5.	......	4,100
1010	" 27	" 28	Decided	V. Little	.45	"	296.	294.	4.	3.	8.3	7.6	.7	.03	.248	.248	.0	....	....	....	.024	2.2	1.6	5.	0.	......	2.300
1041	Dec. 4	Dec. 4	Slight	"	.5	"	309.	294.	15.	3.6	7.5	7.5	.0	.048	.264	.256	.008	....	....	....	.03	1.1	1.8	4.	4.	......	....
1071	" 11	" 11	Decided	Little	.3	"	290.	290.	0.	3.3	4.8	4.4	.1	.04	.336	.272	.064	....	....	....	.012	1.15	1.8	6.	6.	......	5.000
1112	" 18	" 19	Much	"	.25	"	312.	301.	11.	2.8	8.	6.8	1.2	.004	.184	.184	.0	....	....	....	.012	3.25	.0	2.	0.	......	13,500
1142	" 26	" 27	Slight	"	.37	"	290.	274.	16.	2.7	7.4	7.	.4	.054	.28	.24	.04	....	....	....	.0024	3.25	1.8	5.	15.	......	25,700

TABLE 87.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—ILLINOIS RIVER. MORRIS, ILL.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
72	May 29	June 3	Slight	Little	.2	None	416.	394.	22.	42.	17.7	15.4	2.3	5.1	.73	.544	.186	...	....	....	.047	.6	7.3	21.	17.	......	782,000
101	June 6	" 6	Distinct	"	.4	Gassy	368.4	326.	42.4	19.2	15.2	13.5	1.8	3.425	.576	.24	.336	....	....	....	.076	.7	9.11	24.	24.	......	115,000
133	" 13	" 14	"	"	.4	"	416.8	406.4	10.4	39.1	16.5	15.8	.7	5.25	.88	.64	.24	....	....	....	.062	.5	6.	26.	22.	......	720.000
164	" 19	" 20	"	"	.6	"	445.6	436.8	8.8	60.5	16.5	16.4	.1	8.6	.74	.64	.10	....	....	....	.014	3.	5.3	24.	22.	......	250.000
208	" 27	" 27	"	"	.2	None	375.2	372.8	2.4	48.	14.7	6.4	8.3	7.	.7	.48	.32	....	....	....	.016	.025	5.2	24.	20.	......	640,000
240	July 3	July 4	None	"	.6	Gassy	442.	384.	58.	44.9	14.	6.	8.	10.	.62	.504	.116	....	....	....	.008	.25	5.2	26.	21.	......	....
276	" 11	" 11	Distinct	"	.5	None	452.	447.2	5.2	67.	13.8	5.2	8.6	12.	.8	.64	.16	....	....	....	.046	.0	5.3	24.	19.	......	270.000
311	" 17	" 18	Decided	"	.5	Gassy	357.6	312.	45.6	37.	8.4	4.2	4.2	5.8	.62	.392	.228	....	....	....	.1	.6	7.5	24.	18.	......	100,000
348	" 25	" 26	Slight	V. Little	.4	None	458.	431.	27.	56.	9.1	6.	3.1	7.2	.6	.56	.04	....	....	....	.026	.2	6.3	27.	22.	.....	30,000
386	" 31	Aug. 1	"	"	.3	Gassy	413.	399.	14.	6.2	8.4	5.3	3.1	8.9	.6	.52	.08	....	....	....	.015	.01	6.	24.	13.	......	2.755.000
419	Aug. 7	" 9	Distinct	"	.2	"	424.	414.	10.	71.75	15.4	6.2	9.2	11.5	.7	.536	.164	....	....	....	.0	.0	6.3	23.	14.	......	130.000
458	" 14	" 16	"	Little	.4	"	406.	384.	22.	75.	14.7	13.	1.7	10.	.96	.72	.24	....	....	....	026	.0	5.8	21.	14.	......	....
499	" 21	" 23	Slight	V. Little	.1	"	408.	392.	16.	77.5	9.2	6.	3.2	10.	.72	.616	.104	....	....	....	002	.025	5.1	25.	19.	......	65.000
532	" 29	" 30	Decided	Little	.2	"	440.	437.	3.	93.5	14.4	8.6	5.8	12.6	1.02	.544	.476	....	....	....	.002	.05	4.1	26.	17.	......	70.000
574	Sept. 4	Sept. 5	"	"	.2	"	440.	386.	54.	96.	14.	8.5	5.5	15.5	.96	.2	.76	....	....	....	.0	.0	4.1	25.	14.	......	570.000
612	" 12	" 13	Distinct	V. Little	.2	"	472.	442.	30.	98.	16.4	12.9	3.5	13.6	1.42	1.056	.364	....	....	....	.001	.05	5.3	20.	16.	......	1,140.000
648	" 19	" 19	Slight	"	.2	"	450.	428.	22.	91.5	13.6	9.1	4.5	14.2	.94	.622	.318	....	....	....	.002	.0	5.2	13.	11.	......	96,000
684	" 25	" 26	"	"	.3	"	454.	448.	6.	100.	26.	9.	17.	15.	1.22	.504	.716	....	....	....	.0	.1	5.6	17.	10.	......	345.000
724	Oct. 2	Oct. 3	Decided	"	.4	"	456.	450.	6.	99.	14.8	9.	5.8	13.5	.84	.384	.456	....	....	....	.0034	.0	5.4	10.	12.	......	351.000
757	" 7	" 9	None	"	.4	"	368.	366.	2.	66.	9.	8.4	6.	8.4	.82	.56	.26	....	....	....	.002	.15	5.	13.	11.	......	504 000
795	" 16	" 17	Slight	Little	.3	"	334.	326.	8.	62.	8.6	7.6	1.	8.8	.58	.292	.288	....	....	....	.007	.0	5.6	20.	19.	......	16.000
835	" 23	" 23	Much	"	.25	"	383.	374.	9.	75.	13.1	8.6	4.5	12.	1.02	.52	.50	...	....	....	.005	.0	5.6	15.	16.	......	434.000
879	" 30	" 31	"	"	.25	"	404.	367.	37.	73.	12.2	8.6	3.6	9.1	.84	.536	.304	....	....	....	.006	.0	5.1	10.	— 2.	......	466.000
917	Nov. 6	Nov. 7	"	"	.25	"	392.	390.	2.	65.	9.2	7.6	1.6	7.2	.82	.336	.484	....	....	....	.01	.0	5.6	16.	— 4.	......	568,000
962	" 14	" 15	Decided	"	.12	"	418.	390.	28.	50.	9.8	8.7	1.1	5.8	......	......	......	....	....	....	.05	.65	6.3	8.	7.	......	372.000
985	" 20	" 21	"	"	.3	"	392.	378.	14.	47.	9.2	8.6	.6	5.8	.76	.52	.24	....	....	....	.07	1.05	6.3	9.	1.	......	178.000
1014	" 27	" 28	Much	"	.45	"	380.	372.	8.	70.	12.5	8.	4.5	7.5	.94	.624	.316	....	....	....	.05	.6	6.3	6.	— 4.	......	234,000
1144	Dec. 26	Dec. 27	Slight	V. Little	.3	"	402.	386.	16.	50.	15.	8.4	6.6	7.5	1.7	.592	1.108	....	....	....	.05	.05	......	14.	— 8.	......	115,000
....	....	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	.....	.....	......	......	......	......	....

TABLE 88.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—FOX RIVER, OTTAWA, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
73	May 29	May 31	Decided	Much	.1	None	1044.	208.8	835.2	1.25	38.7	9.9	28.8	.175	3.5	.32	3.18	....	....	....	.062	1.1	6.	......	24.	......	29.500
102	June 5	June 6	None	Little	.4	"	436.	312.	124.	2.2	13.6	8.	5.6	.138	.48	.26	.22	....	....	....	.076	1.2	4.	29.	21.	......	27.600
132	" 12	" 13	"	"	.4	"	335.6	318.4	17.2	2.85	8.1	8.	.1	.094	.376	.328	.048	....	....	....	.024	.6	3.	26.	29.	......	16.500
165	" 19	" 20	Decided	"	.0	"	301.6	296.	5.6	2.85	7.6	6.6	1.	.046	.488	.48	.008	....	....	....	.0	.4	.4	28.	33.	.....	4.000
206	" 26	" 27	None	"	.05	"	306.4	306.4	0.	3.3	6.6	4.2	2.4	.04	.328	.328	.0	....	....	....	.002	.025	3.	27.	32.	......	5.000
242	July 3	July 5	Distinct	"	.3	"	302.6	302.	.6	2.9	6.5	4.2	2.3	.08	.78	.28	.5	....	....	....	.006	.0	3.	28.	33.	......	8.000
274	" 10	" 11	"	"	.0	"	301.	285.6	18.4	3.9	6.3	3.3	3.	.07	.288	.288	.0	....	....	....	.0	.0	3.	28.	33.	.....	2.500
312	" 17	" 18	Decided	"	.2	"	363.2	300.8	62.4	5.	14.8	1.1	10.7	.074	1.	.32	.68	....	....	....	.022	1.05	5.	26.	32.	......	34.500
346	" 24	" 26	Slight	"	.3	"	250.	230.	20.	3.4	8.	4.	4.	.07	.544	.36	.184	....	....	....	.0	.0	3.	28.	35.	......	1.300
384	" 31	Aug. 1	"	V. Little	3	"	293.	281.	12.	5.4	6.8	4.4	2.4	.098	.376	.352	.024	....	....	....	.0	.025	3.	25.	32.	......	1.800
420	Aug. 7	" 8	Decided	"	.2	"	308.	294.	14.	5.	7.8	5.5	2.3	.05	.464	.366	.098	....	....	....	.0	.0	4.	27.	33.	......	1.650
459	" 14	" 15	Distinct	Little	.1	"	300.	286.	14.	5.7	7.4	5.5	1.9	.06	.392	.344	.048	....	....	....	.0	.0	3.6	23.	29.	......	....
500	" 21	" 22	None	V. Little	05	"	288.	286.	2.	6.	7.1	5.5	1.6	.044	.456	.352	.104	....	....	....	.002	.2	4.	28.	33.	......	450
529	" 28	" 29	Slight	Cons'd	.0	"	309.	270.	139.	1.9	9.3	7.2	2.1	.08	.44	.352	.088	....	....	....	.0	.05	3.	31.	37.	......	6.100
575	Sept. 4	Sept. 5	"	V. Little	.1	"	331.	280.	54.	5.75	7.	6.6	.4	.096	.368	.344	.024	....	....	....	.0	.005	3.6	26.	31.	......	1.200
610	" 11	" 12	"	"	.1	"	294.	268.	26.	5.4	7.3	7.1	.2	.078	.352	.272	.08	....	....	....	.0	.05	4.	25.	27.	......	1.100
643	" 18	" 19	Much	Little	.2	"	290.	280.	10.	4.7	6.2	6.2	.0	.03	.272	.24	.032	....	....	....	.002	.025	4.	21.	24.	......	3.700
685	" 25	" 26	Slight	V. Little	2	"	320.	314.	6.	6.	9.4	9.4	.0	.054	.32	.272	.048	....	....	..	0	.225	4.	18.5	22.	.....	3.500
725	Oct. 2	Oct. 3	"	"	.3	"	306.	300	6.	5.2	6.2	6.	.2	.034	.248	.24	.008	....	...	....	.0031	25	4.	16.	24.	......	2.500
762	" 9	" 10	"	"	.2	"	310.	310.	0.	5.7	6.8	6.6	.2	.062	.256	.256	.0	...	....	....	.0	.0	4.	17.5	25.	......	8.700
796	" 16	" 17	"	Little	2	"	302.	300.	2.	6.2	7.	6.8	.2	.044	.328	.256	.072	....	....	....	.0	.0	4.	17.	26.	......	1.000
836	" 23	" 23	Much	V. Little	.15	"	316.	312.	4.	6.	6.6	6.	.6	08	.328	.272	.056	....	....	....	.0	.0	4.6	17.5	25.	......	1.500
881	" 30	Nov. 1	Slight	"	.15	"	310.	296.	14.	7.4	6.4	6.4	.0	.018	.224	.224	.0	....	...	....	.002	.35	4.	13.	23.	......	1.600
918	Nov. 6	" 7	"	"	.2	"	318.	300.	18.	6.2	5.8	4.6	1.2	.02	.248	.248	.0	....	....	....	.0068	.05	4.	9.	11.	.....	1.700
953	" 13	" 14	None	"	1	"	298.	296.	2.	5.4	6.8	6.8	.0	.036	.16	.16	.0	....	....	....	.0	.05	3.6	9.5	10.	....	1.000
986	" 20	" 21	Slight	"	.2	"	318.	316.	2.	5.7	6.4	6.4	.0	.05	.288	.216	.072	....	....	....	.002	.2	3.6	13.	14.	....	3.700
1015	" 27	" 28	"	"	.4	"	318.	296.	22.	7.6	1.6	1.6	.0	.054	.216	.216	.0	....	....	....	.012	.6	3.6	7.	8.	.....	3.200
1075	Dec. 11	Dec. 16	"	"	.1	"	318.	318.	0.	6.4	4.2	4.	.2	.161	.272	.192	.08	....	....	....	.014	.65	4.	11.	14.	.....	6.300
1129	" 21	" 22	"	"	.15	"	310.	340.	0.	7.4	4.3	4.3	.0	.1	.056	.01	.016	....	....	....	.012	.35	4.	2.	3.	......	3.200
1152	" 28	" 29	Much	"	.2	"	428.	428.	0.	5.	4.4	4.4	.0	.118	.232	.216	.016	....	...	....	.012	25	3.6	0.	0.	.....	5.500

TABLE 89.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION

SOURCE OF WATER—ILLINOIS RIVER, OTTAWA, ILL.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
166	June 19	June 20	Distinct	Little	.6	None	378.4	358.8	19.6	25.5	15.3	15.2	.1	1.97	.98	.64	.34	....	....	....	.....	.4	4.5	26.	33.	......	60.000
207	" 26	" 27	"	"	.3	"	388.	388.	0.	37.4	9.4	6.2	3.2	4.1	.56	.52	.04	....	....	....	.3	.45	4.	26.	32.	......	15,000
241	July 3	July 5	None	"	.5	"	424.	375.2	48.8	43.	8.6	6.1	2.5	3.8	.52	.496	.024	....	....	....	.4	.05	3.5	27.	33.	......	50.000
275	" 10	" 11	Distinct	"	.5	"	403.6	400.4	3.2	62.	8.6	4.6	4.	1.136	.42	.40	.02	....	....	....	.56	.24	4.	27.	33.	......	25.000
313	" 17	" 18	Decided	"	.2	"	362.4	329.2	33.2	43.5	7.7	4.4	3.3	......	.48	.304	.176	....	....	....	.4	.75	6.	25.	32.	......	65,000
347	" 24	" 25	Slight	"	.4	"	446.	378.	68.	35.	8.5	5.4	3.1	.96	.49	.48	.01	....	....	....	.56	1.64	4.	29.	35.	......	8,000
385	" 31	" 31	"	V. Little	.2	"	418.	411.	7.	54.	8.4	5.7	2 7	4.	.72	.464	.256	....	....	....	.56	.84	4.	26.	32.	......	21,000
421	Aug. 7	Aug. 8	Decided	"	.2	"	402.	369.	33.	53.	8.5	5.5	3.	3.52	.4	.4	.0	....	....	....	.6	.8	3.	28.	33.	......	2,650
460	" 14	" 15	Slight	"	.2	"	401.	401.	0.	58.	7.8	6.2	1.6	4.	.6	.424	.176	....	....	....	.4	1.1	3.	24.	29.	......	....
501	" 21	" 22	None	"	.05	"	412.	410.	2.	66.	8.4	6.	2.4	2.36	.34	.33	.01	....	....	....	.6	2.15	3.	27.	33.	......	2,750
530	" 28	" 29	Slight	Cons'd	.2	"	428.	390.	38.	77.5	13.1	8.8	4.3	2.96	.72	.496	.224	....	....	....	.8	.7	4.	30.	37.	......	650
576	Sept. 4	Sept. 5	"	V. Little	.3	"	456.	420.	36.	47.8	7.6	7.4	.2	4.4	.44	.44	.0	....	....	....	.68	1.	3.	25.	30.	......	9.500
611	" 11	" 12	"	"	.2	"	444.	418.	26.	94.	17.3	8.4	8.9	6.	.52	.4	.12	....	...	....	.4	.45	3.6	24.	27.	......	38.300
614	" 18	" 19	Much	Little	.3	"	428.	408.	20.	91.	9.	8.4	.6	6.4	.58	.16	.42	....	....	....	.28	1.17	3.6	20.5	24.	.....	17.400
686	" 25	" 26	Slight	V. Little	.2	"	410.	388.	22.	81.5	8.8	8.2	.6	3.4	.4	.376	.024	....	....	....	.3	.05	3.	18.	22.	......	13.400
726	Oct. 3	Oct. 3	"	"	.5	"	467.	440.	27.	95.	8.6	8.3	.3	7.52	.44	.36	.08	....	....	....	.02	2.95	3.	15.	21.	......	7,300
763	" 9	" 10	"	"	.3	"	446.	431.	15.	85.5	8.6	8.6	.0	7.04	.52	.464	.056	....	....	....	.48	.4	3.	16.	25.	.....	2.800
797	" 16	" 17	"	"	.3	"	350.	350.	0.	69.	8.8	8.5	.3	5.4	.52	.4	.12	....	....	....	.16	.29	3.	18.	26.	......	7,300
837	" 23	" 23	None	"	.2	"	376.	376.	0.	69.	7.6	7.4	.2	5.4	.42	.4	.02	....	....	....	.36	1.29	3.	18.	26.	.....	5,200
880	" 30	" 31	Slight	"	.3	"	342.	338.	4.	61.	7.8	7.4	.4	8.	.32	.272	.048	....	....	....	.18	.32	3.6	13.5	23.	......	8,200
919	Nov. 6	Nov. 7	"	"	.25	"	374.	370.	4.	64.	7.8	7.8	.0	8.6	.4	.36	.04	....	....	....	.2	.35	3.	8.	21.	.....	52.000
954	" 13	" 14	None	"	.1	"	338.	336.	2.	42.	7.6	7.2	.4	5.	.22	.22	.0	....	....	....	.22	.38	3.	9.	10.	......	1.300
987	" 20	" 21	Slight	Little	.2	"	352.	350.	2.	81.	6.8	6.8	.0	5.4	.46	.32	.14	....	....	....	.7	.9	3.	13.	11.	......	9,000
1016	" 27	" 28	"	V. Little	.48	"	390.	390.	0.	46.	8.1	8.	.1	5.2	.34	.332	.008	....	....	....	.28	1.6	3.	7.	8.	......	25,500
1076	Dec. 11	Dec. 13	Decided	Little	.3	"	370.	370.	0.	44.	8.6	8.	.6	8.	.74	.32	.42	....	....	....	.06	1.1	3.	11.	11.	......	108,000
1130	" 21	" 22	Much	"	.3	"	350.	350.	0.	34.	8.6	7.6	1.	6.	.48	.184	.296	....	....	....	.052	3.25	3.6	2.	3.	......	29,000
1153	" 28	" 29	Slight	"	.4	"	332.	332.	0.	22.	6.8	6.8	.0	2.55	.56	.328	.232	....	....	....	.07	1.8	3.	0.	0.	......	130,000

TABLE 90.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN,
University of Chicago.

SOURCE OF WATER—BIG VERMILION RIVER, LA SALLE, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
49	May 24	May 25	Slight	V. Little	.0	None	466.4	397.6	68.8	9.	3.6	3.5	.1	.02	.16	......	......	....	....	....	.016	1.25	......	......	......	......	4,200
74	" 30	" 31	Decided	Little	.0	"	463.2	445.6	17.6	13.4	5.7	5.2	.5	.016	.208	.152	.056	....	....	....	.026	1.	......	......	......	......	1,680
104	June 6	June 7	"	"	.3	"	400.	302.4	97.6	6.55	7.6	5.4	2.2	.11	.253	.168	.084	....	....	....	.05	1.45	......	......	......	......	6,250
146	" 15	" 15	Distinct	"	.0	"	508.	484.8	23.2	16.6	5.3	4.4	.9	.094	.256	.16	.096	....	....	....	.01	.8	......	......	......	......	5,100
170	" 20	" 21	Decided	"	.0	"	346.4	338.4	8.	8.8	6.2	6.1	.1	.056	.264	.256	.008	....	....	....	.03	2.2	......	......	......	......	1,550
209	" 27	" 27	Distinct	"	.0	"	494.4	488.	6.4	18.55	3.4	1.7	1.7	.086	.184	......	......	....	....	....	.014	.6	......	......	......	......	1,100
243	July 4	July 5	"	"	.1	"	637.6	634.4	3.2	29.9	5.	1.4	3.6	.092	.24	.12	.12	....	....	....	.013	.4	9.1	......	......	......	2,450
277	" 11	" 11	"	"	.0	"	344.	316.	28.	8.1	4.4	2.	2.4	.042	.24	.12	.12	....	....	....	.032	3.15	9.11	......	......	......	3,100
311	" 18	" 19	"	"	.05	"	397.6	327.2	70.4	9.25	4.6	2.4	2.2	.12	.248	.24	.008	....	....	....	.04	.3	11.6	......	......	......	8,150
349	" 25	" 26	None	V. Little	.0	"	516.	516.	0.	21.05	4.	1.	3.	.114	.216	.216	.0	....	....	....	.024	.85	9.11	......	......	......	1,850
388	Aug. 1	Aug. 2	Slight	"	.0	"	740.	732.	8.	34.4	3.9	1.	2.9	.098	.232	.232	.0	....	....	....	.008	.4	9.5	......	......	......	1,700
423	" 8	" 9	Decided	Little	.0	"	910.	904.	6.	48.1	5.5	2.3	3.2	.142	.376	.248	.128	....	....	....	.008	.05	9.3	......	......	......	1,800
461	" 15	" 17	Slight	V. Little	.0	"	620	584.	36.	29.6	6.2	4.2	2.	.154	.4	.216	.184	....	....	....	.004	.3	9.1	......	......	......	....
502	" 22	" 23	Distinct	Cons'd	.0	"	628.	541.	81.	35.	6.6	3.1	3.5	.124	.416	.24	.176	....	....	....	.005	.3	9.3	......	......	......	1,050
533	" 29	" 30	Decided	"	.0	"	783.	694.	89.	53.	6.6	4.1	2.5	.284	.4	.24	.16	....	....	....	.009	.15	......	......	......	......	10,100
577	Sept. 5	Sept. 6	"	Little	.0	"	1114.	932.	182.	66.	7.4	5.1	2.3	.296	.376	.168	.208	....	....	....	.018	.005	9.2	......	......	......	2,800
613	" 12	" 13	Distinct	V. Little	.0	"	1150.	1072.	78.	80.	6.	5.6	.4	.114	.272	.224	.048	....	....	....	.009	.05	......	......	......	......	1,400
649	" 19	" 19	Much	Little	.0	"	1196.	1176.	20.	84.	5.6	4.9	.7	.072	.328	.224	.104	....	....	....	.002	.15	......	......	......	......	1,600
687	" 26	" 27	"	"	.25	"	1734.	1721.	13.	131.	5.3	4.	1.3	.078	.176	.112	.064	....	....	....	.0084	.15	......	......	......	......	1,700
727	Oct. 3	Oct. 4	Decided	"	.18	"	1662.	1614.	48.	127.	5.3	4.1	1.2	.088	.192	.088	.104	....	....	....	.009	.2	9.5	......	......	......	3,700
766	" 10	" 12	Distinct	V. Little	.13	"	1785.	1738.	47.	118.	4.8	4.3	.5	.096	.136	.08	.056	....	....	....	.007	.4	......	......	......	......	3,900
802	" 17	" 18	Much	Little	.2	"	1518.	1480.	38.	123.	5.	4.3	.7	.216	.2	.104	.096	....	....	....	.012	.35	9.7	......	......	......	4,700
841	" 24	" 25	Distinct	"	.1	"	1536.	1529.	7.	109.	4.6	3.1	1.5	.136	.208	.128	.08	....	....	....	.0052	.7	......	......	......	......	3,700
882	" 31	Nov. 1	"	"	.1	"	1622.	1564.	58.	114.	4.6	3.8	.8	.088	.168	.088	.08	....	....	....	.012	.25	......	......	......	......	1,800
920	Nov. 7	" 8	Slight	V. Little	.1	"	1584.	1527.	57.	118.	4.2	3.8	.4	.504	.128	.08	.048	....	....	....	.01	.15	......	......	......	......	2,500
959	" 14	" 15	Distinct	"	.1	"	1722.	1700.	22.	126.	4.	3.2	.8	.656	.018	.018	.0	....	....	....	.012	.25	......	......	......	......	....
988	" 21	" 22	Slight	Little	.1	"	1286.	1285.	1.	82.	3.8	3.8	.0	.14	.208	.088	.12	....	....	....	.026	.2	......	......	......	......	47,300
1017	" 28	" 29	"	V. Little	.32	"	1507.	1500.	7.	101.	2.6	2.4	.2	.496	.128	.104	.024	....	....	....	.03	.65	......	......	......	......	5,800
1048	Dec. 5	Dec. 7	"	"	.1	"	1641.	1576.	65.	113.5	4.2	4.2	.0	.72	.096	.096	.0	....	....	....	.036	.3	......	......	......	......	10,500
1077	" 12	" 15	Much	Little	.0	"	1376.	1352.	21.	80.	3.2	3.2	.0	1.	.68	.088	.592	....	....	....	.017	.8	......	......	......	......	23,000
1113	" 19	" 20	Slight	V. Little	.4	"	617.	613.	4.	30.	4.	4.	.0	.316	.184	.114	.04	....	....	....	.01	.1	......	......	......	......	12,600
1148	" 26	" 28	"	Little	.21	"	488.	446.	42.	12.	3.3	3.2	.1	.168	.152	.12	.032	....	....	....	.03	.17	......	......	......	......	62,000

Table 91.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of Edwin O. Jordan,
University of Chicago.

Source of Water—Illinois and Michigan Canal, La Salle, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
51	May 24	May 25	Decided	Little	....	Gassy	428.8	372.	56.8	12.	8.4	6.9	1.5	.640	.368	.240	.128	....	....	....	.08	.8	......	......	......	......	20,000
76	" 30	" 31	Distinct	"	.05	"	517.6	374.4	143.2	13.3	10.2	6.7	3.5	.576	.640	.476	.164	....	....	....	.07	.8	......	......	......	......	32,000
106	June 6	June 7	"	"	.3	"	404.	363.2	40.8	11.05	11.4	7.9	3.5	.144	.576	.336	.240	....	....	....	.05	.5	......	......	......	......	22,500
148	" 15	" 16	Decided	"	.0	None	356.	313.4	42.6	9.8	9.1	7.7	1.4	.64	.56	.352	.208	....	....	....	.054	.45	......	......	......	......	20,000
172	" 20	" 21	"	"	.0	"	363.2	320.	43.2	11.3	10.	9.	1.	.56	.60	.400	.200	....	....	....	.036	.0	......	......	......	......	13,000
211	" 27	" 27	Distinct	"	.05	"	310.4	300.8	9.6	8.75	7.2	4.4	2.8	.656	.48	.344	.136	....	....	....	.02	.1	......	......	......	......	91,500
245	July 4	July 5	"	"	.4	"	335.2	299.6	35.6	8.7	8.5	5.1	3.4	.64	.48	.48	.0	....	....	....	.024	.3	9.1	......	......	......	16,500
279	" 11	" 12	None	"	.2	"	352.4	321.6	30.8	12.	7.6	3.8	3.8	.312	.576	.4	.176	....	....	....	.018	.2	9.1	......	......	......	23,000
316	" 18	" 19	Slight	"	.0	"	425.6	387.6	38.	16.3	6.8	4.6	2.2	.336	.416	.384	.032	....	....	....	.102	1.3	11.6	......	......	......	19,500
351	" 25	" 26	None	"	.3	"	340.	318.	22.	15.	6.4	4.6	1.8	.568	.376	......	......	....	....	....	.046	.45	9.11	......	......	......	42,000
390	Aug. 1	Aug. 2	Slight	V. Little	.2	"	339.	297.	42.	13.	7.2	3.8	3.4	.728	.476	.4	.076	....	....	....	.044	.4	9.5	......	......	......	24,000
425	" 8	" 9	"	Little	.1	"	307.	281.	26.	12.	8.	5.1	2.9	.736	.456	......	......	....	....	....	.044	.025	9.3	......	......	......	74,500
462	" 15	" 17	None	V. Little	.1	"	322.	305.	17.	10.75	5.7	5.7	0.	.584	.264	.192	.072	....	....	....	.022	.05	9.1	......	......	......	....
504	" 22	" 23	Distinct	Cons'd	.0	"	354.	292.	62.	13.	8.	5.4	2.6	......	......	.448	......	....	....	....	.036	.2	9.3	......	......	......	24,350
535	" 29	" 30	Slight	Little	.1	"	320.	297.	23.	13.	7.6	7.	.6	.56	.4	.368	.032	....	....	....	.011	.3	9.3	......	......	......	47,750
578	Sept. 5	Sept. 6	Distinct	"	.0	"	351.	301.	50.	15.	8.4	7.9	.5	.504	.36	.272	.088	....	....	....	.028	.005	9.2	......	......	......	19,000
615	" 12	" 13	Slight	"	.1	"	393.	316.	77.	16.5	8.8	7.1	1.7	.576	.48	.328	.152	....	....	....	.024	.3	9.3	......	......	......	104,000
650	" 19	" 19	Much	"	.2	"	408.	366.	42.	20.	9.	7.7	1.3	.56	.54	.344	.196	....	....	....	.058	.8	9.5	......	......	......	62,000
689	" 26	" 27	Decided	"	.35	"	398.	340.	58.	21.	13.2	8.6	4.6	1.02	.32	.32	.0	....	....	....	.028	3.	9.5	......	......	......	36,000
729	Oct. 3	Oct. 4	"	"	.25	"	368.	330.	38.	18.	8.4	7.2	1.2	.4	.4	.352	.048	....	....	....	.026	.35	9.4	......	......	......	22,000
768	" 10	" 12	"	"	.2	"	318.	318.	30.	14.	7.8	7.1	.7	.5	.58	.256	.324	....	....	....	.008	.025	9.5	......	......	......	34,000
804	" 17	" 18	Much	"	.2	"	352.	316.	36.	15.	8.2	6.9	1.3	.6	.5	.272	.228	....	....	....	.022	.55	9.7	......	......	......	61,000
813	" 24	" 25	Slight	"	.15	"	350.	318.	32.	14.	7.5	6.	1.5	.52	.38	.32	.06	....	....	....	.016	.6	9.7	......	......	......	33,000
884	" 31	Nov. 1	Distinct	"	.25	"	388.	362.	26.	17.5	7.8	7.	.8	.62	.5	.248	.252	....	....	....	.03	.3	9.9	......	......	......	48,000
922	Nov. 7	" 8	Decided	"	.25	"	360.	330.	30.	15.	6.8	6.4	.4	.36	.42	.216	.204	....	....	....	.024	.3	9.9	......	......	......	16,000
961	" 14	" 15	Much	"	.1	"	355.	327.	28.	15.	8.	5.6	2.4	.28	.36	.184	.176	....	....	....	.014	.1	10.3	......	......	......	....
990	" 21	" 22	Slight	"	.2	"	351.	323.	28.	12.	6.	5.4	.6	.33	.52	.248	.272	....	....	....	.022	.05	10.	......	......	......	152,000
1019	" 28	" 28	Decided	"	.42	"	352.	326.	26.	13.	5.7	4.4	1.3	.32	.34	.208	.132	....	....	....	.016	.4	10.2	......	......	......	52,000
1059	Dec. 5	Dec. 7	Distinct	"	.12	"	378.	342.	36.	15.5	6.6	5.	1.6	1.	.44	.264	.176	....	....	....	.011	.2	10.2	......	......	......	84,000
1079	" 12	" 13	Much	Cons'd	.2	"	534.	450.	84.	26.	7.	6.2	.8	1.1	.2	.168	.032	....	....	....	.03	.94	10.9	......	......	......	147,000
1115	" 19	" 20	"	V. Little	.4	"	372.	372.	0.	33.	7.6	7.1	.5	2.8	.42	.304	.116	....	....	....	.076	1.5	11.2	......	......	......	107,000
1150	" 26	" 28	Slight	"	.5	"	487.	477.	10.	40.	7.6	7.2	.4	3.	.56	.344	.216	....	....	....	.026	.25	11.1	......	......	......	39,000

TABLE 92.

STREAMS EXAMINATION — SANITARY DISTRICT OF CHICAGO

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—ILLINOIS RIVER, LA SALLE, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dis-solv'd	Nitrogen as Ammonia. Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
50	May 24	May 25	Distinct	Little	....	Gassy	374.4	337.6	368.	15.	10.5	9.6	.9	.64	.352	.304	.48	....	....	....	.16	1.79	......	......	......	......	11,100
75	" 30	" 31	Decided	"	.1	"	439.2	265.2	174.	12.	20.2	10.9	9.3	.656	.704	.476	.228	....	....	....	.22	1.33	......	......	......	......	25,000
105	June 6	June 7	"	"	.7	"	365.6	313.6	52.	8.7	13.2	11.1	2.1	.384	.384	.384	.0	....	....	....	.36	.39	......	......	......	......	6,600
147	" 15	" 16	"	"	.8	None	404.	357.8	46.4	22.2	16.4	15.	1.4	.664	.656	.56	.096	....	....	....	.4	.7	......	......	......	......	2,600
171	" 20	" 21	"	"	.6	"	413.6	356.	57.6	22.1	16.	14.4	1.6	.8	.576	.488	.088	....	....	....	.3	.7	......	......	......	......	14,500
210	" 27	" 28	Distinct	"	.4	"	416.8	384.8	32.	40.	9.4	6.2	3.2	1.8	.8	.44	.36	....	....	....	.712	1.7	......	......	......	......	4,900
244	July 4	July 5	"	"	.6	"	398.	362.8	35.2	30.7	8.6	6.	2.6	1.2	.55	.488	.062	....	....	....	.44	1.11	9.1	......	......	......	7,000
278	" 11	" 12	None	"	.5	"	397.2	391.2	6.	63.	8.2	5.4	2.8	2.4	.416	.4	.016	....	....	....	.68	.72	9.9	......	......	......	7,150
315	" 18	" 19	Distinct	"	.0	"	373.6	306.4	67.2	29.	8.2	4.8	3.4	1.2	.544	.408	.136	....	....	....	.4	.2	11.6	......	......	......	11,850
350	" 25	" 26	Slight	"	.4	"	440.	374.	66.	30.	8.2	5.	3.2	.3	.544	.376	.168	....	....	....	.2	1.65	9.11	......	......	......	2,000
389	Aug. 1	Aug. 2	"	"	.3	"	597.	403.	194.	47.5	9.	5.4	3.6	.9	.64	.64	.0	....	....	....	.4	2.65	9.5	......	......	......	1,650
424	" 8	" 9	Decided	"	.3	"	410.	374.	36.	48.	9.4	5.8	3.6	.58	.576	......	......	....	....	....	.6	2.2	9.3	......	......	......	1,800
463	" 15	" 17	Slight	V. Little	.3	"	401.	366.	35.	56.	8.9	6.9	2.	1.5	.392	.230	.162	....	....	....	.32	1.73	9.1	......	......	......	....
503	" 22	" 23	"	Little	.05	"	433.	364.	69.	63.5	9.	6.	3.	1.1	.752	.408	.344	....	....	....	.52	2.23	9.3	......	......	......	1,600
534	" 29	" 30	Distinct	"	Muddy	"	408.	404.	4.	67.5	9.	7.8	1.2	1.58	.56	.392	.168	....	....	....	.8	2.	2.4	......	......	......	6,900
578	Sept. 5	Sept. 6	Slight	"	.1	"	450.	406.	44.	77.5	8.8	8.	.8	2.176	.66	.288	.372	....	....	....	.6	1.7	9.2	......	......	......	1,100
614	" 12	" 13	Distinct	V. Little	.02	"	463.	398.	65.	69.	8.7	7.6	1.1	4.4	.42	.376	.044	....	....	....	.3	1.1	9.4	......	......	......	8,000
651	" 19	" 20	Much	Little	.1	"	418.	348.	70.	71.5	8.5	8.	.5	2.88	.11	......	......	....	....	....	.1	1.75	9.4	......	......	......	2,900
688	" 26	" 27	Slight	"	.4	"	419.	416.	3.	72.	8.4	7.7	.7	5.44	.36	.36	.0	....	....	....	.2	1.7	9.5	......	......	......	7,000
728	Oct. 3	Oct. 4	Decided	V. Little	.5	"	468.	454.	14.	82.	8.6	7.8	.8	7.2	.42	.352	.068	....	....	....	.1	2.25	9.5	......	......	......	3,600
767	" 10	" 12	Distinct	"	.3	"	458.	453.	5.	74.	8.3	8.1	.2	6.24	.42	.344	.076	....	....	....	.24	.51	9.	......	......	......	6,800
803	" 17	" 18	Much	Little	.4	"	392.	381.	11.	67.	8.9	8.	.9	5.84	.4	.336	.064	....	....	....	.32	1.23	9.8	......	......	......	16,400
842	" 24	" 25	Slight	"	.2	"	358.	356.	2.	58.	7.9	6.8	1.1	4.1	.34	.32	.02	....	....	....	.36	1.29	9.8	......	......	......	10,400
883	" 31	Nov. 1	"	"	.3	"	380.	342.	38.	52.	8.2	6.6	1.6	4.3	.38	.272	.108	....	....	....	.3	.25	9.11	......	......	......	5,600
921	Nov. 7	" 8	"	V. Little	.25	"	376.	375.	1.	60.	8.	7.2	.8	5.3	.38	.256	.124	....	....	....	.1	.7	9.11	......	......	......	7,700
960	" 14	" 15	"	"	.15	"	360.	350.	10.	34.	7.6	7.2	.4	2.6	.2	.192	.008	....	....	....	.....	.75	10.3	......	......	......	14,200
989	" 21	" 22	"	Little	.2	"	360.	360.	0.	33.	6.8	6.8	.0	2.2	.3	.3	.0	....	....	....	.3	1.2	10.4	......	......	......	7,900
1018	" 28	" 29	"	V. Little	Muddy	"	386.	379.	7.	37.	7.6	6.9	.7	3.7	.352	.32	.032	....	....	....	.22	2.3	10.2	......	......	......	6,600
1049	Dec. 5	Dec. 7	"	"	.3	"	395.	386.	9.	43.5	7.8	7.6	.2	5.	.42	.376	.044	....	....	....	.14	.36	10.2	......	......	......	27,500
1078	" 12	" 13	Much	Little	.3	"	391.	391.	0.	39.	7.6	7.	.6	1.04	.504	.296	.208	....	....	....	.1	.75	10.11	......	......	......	14,200
1114	" 19	" 20	"	"	.3	"	392.	381.	11.	31.	7.6	7.6	.0	8.3	.46	.256	.204	....	....	....	.056	2.5	11.2	......	......	......	228,000
1149	" 26	" 28	Decided	"	.38	"	352.	302.	50.	20.	7.	7.	.0	2.2	.56	.288	.272	....	....	....	.054	2.7	11.1	......	......	......	32,400

TABLE 93.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, HENRY, ILL.

Report of EDWIN O. JORDAN.
University of Chicago.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
80	May 30	June 1	None	Little	Muddy	None	406.4	327.2	79.2	12.6	11.4	10.4	1.	.576	.496	.336	.160	....	....	....	.11	1.64	8.6	......	24.	......	14,500
107	June 6	" 7	Decided	"	.6	Gassy	356.	300.	56.	12.6	14.5	11.5	3.	.328	.56	.328	.232	....	....	....	.28	1.02	8.4	29.	29.	......	26,000
134	" 12	" 14	"	"	.9	None	369.6	326.4	43.2	16.4	14.4	12.9	1.5	.36	.72	.48	.24	....	....	....	.38	1.62	8.2	28.	26.	......	8,500
173	" 20	" 21	"	Cons'd	6	"	463.2	342.4	120.8	20.4	18.1	14.2	3.9	.341	1.04	.48	.56	....	....	....	.1	1.05	6.7	30.	30.	......	7,000
212	" 27	" 28	Distinct	Little	.5	"	419.6	398.4	21.2	35.1	9.	9.	0.	1.12	.592	.48	.112	....	....	....	.52	.13	6.3	28.	31.	......	11,500
253	July 5	July 6	Decided	"	.5	"	361.6	340.	21.6	26.1	14.8	5.8	9.	.48	.112	......	......	....	....	....	.28	.47	7.5	29.	29.	......	27,000
282	" 12	" 13	"	"	.5	"	425.6	398.8	26.8	48.5	7.8	4.9	2.9	2.4	592	.48	.112	....	....	....	.36	1.19	7.5	30.	32.	......	30,500
355	" 26	" 26	Slight	"	.5	"	356.	346.	10.	27.5	8.2	5.7	2.5	.336	.504	.384	.12	....	....	....	.24	1.41	8.2	31.	31.	......	43,000
392	Aug. 2	Aug. 3	Decided	V. Little	.2	"	419.	370.	49.	37.5	8.4	5.	3.4	.8	.52	.368	.152	....	....	...	.3	1.3	8.	29.	29.	......	10,500
422	" 8	" 9	"	Little	.2	"	446.	389.	57.	44.	8.5	5.6	2.9	1.36	.504	.432	.072	....	....	....	.3	.8	7.	26.	23.	......	4,500
464	" 15	" 17	Slight	V. Little	.3	"	400.	361.	39.	44.5	8.2	6.	2.2	1.04	.496	.424	.072	....	....	....	.2	1.8	8.	26.	22.	......	....
487	" 17	" 19	Decided	Little	.3	"	408.	390.	18.	48.	9.1	6.4	2.7	1.328	.8	.504	.296	....	....	....	.22	1.	......	28.	33.	......	....
505	" 22	" 23	Distinct	"	.05	"	412.	369.	43.	54.5	14.2	6.6	7.6	.84	.704	.632	.072	....	....	....	.32	2.03	6.8	28.	29.	......	3,000
536	" 29	" 30	Decided	"	.1	"	418.	398.	20.	59.	8 5	8.2	.3	.92	.56	.416	.144	....	....	....	.4	1.35	6.8	28.	27.	......	500
583	Sept. 6	Sept. 7	Slight	"	.1	"	397.	394.	3.	56.	9.8	8.8	1.	.9	.744	.424	.320	....	....	....	.4	.35	6.8	29.	30.	......	10,600
616	" 12	" 14	Distinct	"	.02	"	438.	378.	70.	60.	8.6	7.1	1.5	.96	.64	.328	.312	....	....	....	.22	.68	6.8	20.	21.	......	5,200
652	" 18	" 21	Much	"	.1	"	422.	389.	33.	68.	9.4	9.	.4	1.82	.8	.352	.448	....	....	....	.2	1.85	7.1	21.	21.	.....	2,900
690	" 26	" 28	Decided	"	.4	"	400.	398.	2.	68.	17.7	8.2	9.5	1.26	.52	.32	.2	....	....	....	1.2	1.8	7.	18.	16.	......	1,100
730	Oct. 3	Oct. 4	"	"	.35	"	412.	388.	21.	66.	14.8	8.2	6.6	3.2	1.04	.352	.688	....	....	....	.4	1.45	7.	15.	14.	......	3,100
769	" 10	" 13	"	"	.25	"	438.	430.	8.	75.5	8.4	8.4	.0	4.6	.624	.36	.264	....	....	....	.15	.45	7.1	16.	16.	......	7,200
805	" 17	" 19	Much	"	.2	"	438.	407.	31.	67.	8.7	8.7	.0	3.52	.44	.328	.112	....	....	....	.2	1.35	7.7	19.	11.	......	6,800
845	" 25	" 26	Decided	"	.2	"	390.	362.	28.	61.	8.	7.	1.	5.2	.44	.344	.096	....	....	....	.14	1.26	7.2	14.	16.	......	2,900
885	Nov. 1	Nov. 1	Distinct	"	.25	"	378.	374.	4.	53.	7.8	6.6	1.2	2.6	.376	.336	.04	....	....	....	.26	1.79	7.3	10.	13.	......	2,500
923	" 7	" 9	"	"	.25	"	370.	354.	16.	53.	7.4	6.	1.4	4.8	.352	.264	.088	....	....	....	.12	.23	7.3	9.	7.	......	800
964	" 14	" 16	Much	"	.1	"	382.	368.	14.	45.	8.2	7.4	.8	3.6	.328	.168	.16	....	....	....	.1	.45	7.5	9.	7.	......	4,000
992	" 22	" 23	Decided	"	.15	"	376.	368.	8.	36.5	6.6	5.6	1.	2.2	.272	.272	.0	....	....	....	.13	.17	7.6	8.	7.	....	4,400
1020	" 28	" 29	Slight	"	.43	"	364.	350.	14.	35.	6.6	6.1	.5	2.96	.296	.288	.008	....	....	....	.14	1.41	7.6	8.	6.	......	2,700
1046	Dec. 5	Dec. 6	Decided	V. Little	.2	"	376.	370.	6.	41.5	8.	7.9	.1	3.28	.424	.352	.072	....	....	....	.08	.72	7.3	3.	— 9.	......	4,700
1080	" 12	" 13	Much	Little	.25	"	380.	356.	24.	44.	7.	6.2	.8	4.	.416	.416	.0	....	....	....	.06	1.14	7.6	2.	6.	.....	16,300
1116	" 19	" 20	"	"	.22	"	362.	358.	4.	31.	7.	7.	.0	3.4	.336	.312	.024	....	....	....	.056	.6	8.	0.	— 1.	......	74,000
1151	" 27	" 28	Slight	V. Little	.32	"	352.	316.	6.	20.	8.	6.8	1.2	1.72	.352	.224	.128	....	....	....	.036	2.25	8.25	0.	—11.	......	49,600

TABLE 94

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, AVERYVILLE, ILL.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
86	May 30	June 1	Slight	Little	.2	None	386.4	322.3	64.1	30.	20 6	10.4	10.2	.048	.408	.304	.104	....	....	....	.09	1.56	30.4	......	24.	......	2.460
119	June 8	" 9	Decided	"	.5	"	388.	332.	56.	15.4	11.6	11.6	0.	.564	.581	.4	.184	....	....	....	.16	.54	31.8	25.	26.	......	3.450
135	" 12	" 14	"	"	.4	"	322.	312.8	9.2	11.5	13.2	12.6	.6	.104	.44	.44	.0	....	....	....	.18	1.37	30.7	26.	27.	.....	5.200
171	" 20	" 21	"	"	.5	"	372.	330.	42.	13.7	9.8	9.6	.2	.32	.44	.384	.056	....	....	....	.14	.56	29.4	26.	27.	.....	950
213	" 27	" 28	Distinct	"	.5	"	392.	358.4	33.6	19.4	7.5	5.6	1.9	.208	.520	.44	.08	....	....	....	.14	.51	28.	26.	28.	.....	3,550
246	July 3	July 5	"	"	.5	"	380 8	375.2	5.6	18.	9.	9.	0.	.12	.528	.52	.008	....	....	....	.12	1.73	27.1	21.	25.	.....	7.750
280	" 10	" 12	"	"	.5	"	384.	353.6	30.4	33.75	8.3	5.9	2.4	.272	.464	.408	.056	....	....	....	.28	.47	27.7	26.	28.	......	1.050
317	" 18	" 19	Decided	"	.0	"	......	......	......	44.	7.4	3.8	3.6	.96	.48	.44	.04	....	....	....	.44	1.76	29.1	26.	26.5	......	3,000
352	" 24	" 26	Slight	"	.3	"	332.	301.	31.	29.	6.7	3.7	3.	.56	.392	.36	.032	....	....	....	.24	2.01	28.8	28.	30.	......	3,200
387	Aug. 1	Aug. 2	Distinct	"	.3	"	424.	338.	86.	24.	7.7	4.5	3.2	.232	.461	.336	.128	....	...	....	.14	1.61	28.6	25.	21.	......	3.500
426	" 8	" 9	Decided	"	.3	"	426.	349.	77.	29.	8.8	5.4	3.4	.36	.44	.384	.056	....	....	....	.12	.38	27.6	24.	20.	......	1.100
465	" 15	" 17	Much	"	.3	"	439.	386.	53.	37.5	8.4	5.8	2.6	.16	.4	.376	.024	....	....	....	.16	1.84	27.	23.	26.	......	....
489	" 17	" 19	Decided	"	.3	"	396	390.	6.	41.	8.4	5.5	2.9	.288	.456	.408	.018	....	....	....	.14	.66	.....	25.	29.	......	....
506	" 22	" 23	Distinct	"	.1	"	388.	352.	36.	40.5	8.4	6.	2.4	.222	.432	.392	.04	....	....	....	.072	4.6	26.7	26.	26.	......	1.350
537	" 29	" 30	Decided	"	.4	"	378.	358.	20.	45.	8.5	7.9	.4	.336	.552	.336	.216	....	....	....	.076	.89	26.7	28.	25.	......	2,000
580	Sept. 5	Sept. 6	"	"	.1	"	391.	352.	42.	51.	8.1	8.	.1	.272	.4	.218	.152	....	....	....	.08	.84	27.	27.	26.	......	7.300
617	" 12	" 13	Distinct	"	.02	"	410.	358.	52.	51.	8.1	7.1	1.	.256	.576	.328	.248	....	....	....	.086	.94	27.3	21.	26.	......	2,000
653	" 19	" 20	Much	"	.1	"	391.	371.	20.	53.	8.2	7.	1.2	.172	.488	.328	.16	....	....	....	.076	.94	27.6	20.	17.	......	1.400
691	" 26	" 27	Decided	"	.4	"	381.	368.	13.	56.	8.4	7.6	.8	.128	.432	.336	.096	....	....	....	.16	1.09	27.4	12.	11.	......	1.600
731	Oct. 3	Oct. 4	"	"	.38	"	411.	396.	15.	65.	8.6	8.3	.3	.128	.48	.288	.172	....	....	....	.6	1.05	27.3	12.	15.	......	600
770	" 10	" 13	"	"	.25	"	408.	380.	28.	67.	8.4	7.4	1.	.272	.64	.264	.376	....	....	....	.64	.91	27.3	15.	17.	......	1,800
806	" 17	" 19	Much	"	.4	"	422.	398.	24.	66.	8.1	7.1	1.	.216	.432	.32	.112	....	....	....	.6	2.25	27.6	18.	13.	......	2,800
844	" 24	" 25	Distinct	"	.25	"	426.	408.	18.	69.	9.4	8 4	1.	.196	.648	.328	.32	....	....	....	1.2	2.3	27.6	15.	18.	......	3.100
886	" 31	Nov. 1	Slight	"	.3	"	396.	394.	2.	63.	8.	8.	0.	.8	.512	.256	.256	....	....	....	1.5	.3	27.8	12.	8.	......	500
921	Nov. 7	" 8	"	"	.2	"	351.	346.	8.	54.	7.2	6.	1.2	3.2	.312	.264	.018	....	....	....	.3	.05	27.8	7.	8.	.. ...	2.300
963	" 14	" 15	Decided	"	.4	"	402.	390.	12.	54.	7.	6.6	1	2.96	.52	128	.392	....	....	....	.084	1	28.2	9.	9.	......	3.000
991	" 21	" 22	Distinct	"	.2	"	370.	351.	19.	47.	6.1	5.8	.6	3.72	.392	.24	.152	....	....	....	.06	.45	28.3	10.	12.	. ...	19.500
1021	" 28	" 29	Slight	"	.35	"	356.	332.	24.	32.	6.4	5.3	1 1	1.64	.304	.224	.08	....	....	....	.06	8	28.1	6.	1.	......	1.500
1047	Dec. 5	Dec. 6	Decided	"	.15	"	360.	350.	0.	31.	7.	6 4	9	1 38	.416	.248	.168	....	....	....	.082	1	27.9	3.	— 2.	....	1,500
1081	" 12	" 13	Much	"	.25	"	368.	357.	11.	38	6 2	6.2	0	2.6	.272	.272	.0	....	....	....	.056	2.35	28 2	5.	2.	....	3,700
1119	" 19	" 21	"	"	.25	"	374.	374	3.	40.	6.	6.	0	3.52	.32	.32	.0	....	....	....	.06	.85	28.9	1.	— 2	......	11.600
1145	" 26	" 27	"	"	.35	"	382.	382	0.	31.	7.7	6 2	1 5	3.2	.36	.28	.08	....	....	...	.06	.85	29.8	0.	— 2.	......	7,000

TABLE 95.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN,
University of Chicago.

SOURCE OF WATER—ILLINOIS RIVER, WESLEY CITY, ILL.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
79	May 29	June 1	None	Little	Muddy	None	370.	328.	42.	12.85	9.3	9.3	.0	.344	.504	.36	.144	....	....	....	.076	2.	3.	......	......	......	932,000
120	June 7	" 9	Decided	"	.5	"	440.	318.4	121.6	16.5	8.4	8.3	.1	.76	.48	.376	.104	....	....	....	16	1.94	4.	......	21.	......	440,000
136	" 12	" 14	"	"	.4	"	312.4	309.6	32.8	13.9	13.2	13.1	.1	.176	.456	.408	.048	....	....	....	.076	.5	6.	......	26.	......	275,000
177	" 19	" 21	"	"	.4	"	351.2	312.	39.2	14.	9.6	9.4	.2	......	.48	.392	.088	....	....	....	.076	1.2	8.	......	30.	......	2,785,000
214	" 26	" 28	Distinct	"	.6	"	366.4	349.6	16.8	18.7	8.8	5.8	3.	.216	.528	.432	.096	....	....	....	.12	.53	8.	......	30.	......	3.390,000
247	July 3	July 5	None	"	.5	"	386.	358.4	27.6	18.6	9.	7.	2.	.152	.552	.48	.072	....	....	....	.09	1.75	6.	......	24.	......	1,975,000
281	" 10	" 12	Decided	"	.5	"	403.2	359.6	43.6	33.75	8.3	5.2	3.1	......	.464	.432	.032	....	....	....	.18	1.52	6.	25.	30.	......	275,000
353	" 24	" 26	Slight	"	.3	"	324.	293.	31.	28.5	7.6	4.4	3.2	.248	.384	.376	.008	....	....	....	.2	1.05	6.	......	32.	......	95.000
488	Aug. 16	Aug. 19	Decided	"	.3	"	411.	392.	19.	39.5	13.2	6.4	6.8	1.008	.84	.56	.28	....	....	....	.3	.55	......	25.	21.	......	....
507	" 21	" 23	Slight	Cons'd	.05	"	415.	361.	51.	41.5	9.2	6.1	3.1	.728	.688	.432	.256	....	....	....	.18	1.07	6.	......	......	......	710.000
538	" 28	" 30	Distinct	Little	.1	"	373.	356.	17.	43.	8.3	8.1	.2	.256	.504	.4	.104	....	....	....	.07	.73	7.	......	......	......	205,000
581	Sept. 5	Sept. 6	Decided	"	.1	"	373.	332.	41.	46.	9.2	8.1	1.1	.464	.88	.36	.52	....	....	....	.066	.44	......	38.	28.	......	170.000
618	" 12	" 13	Distinct	V. Little	.1	"	395.	360.	35.	49.	9.2	8.	1.2	.896	.8	.4	.4	....	....	....	.12	.28	1.	20.	27.	......	240,000
669	" 18	" 22	Decided	Cons'd	.2	"	396.	348.	48.	49.5	8.8	6.8	2.	.2	.648	.4	.248	....	....	....	.038	.71	.5	20.	21.	......	....
692	" 26	" 27	"	Little	.4	"	364.	358.	6.	53.	9.	7.4	1.6	......	.656	.352	.304	....	....	....	.058	.4	1.	15.	18.	......	5,000
732	Oct. 3	Oct. 4	"	"	.25	"	394.	366.	28.	53.	9.6	8.	1.6	.336	.648	.344	.304	....	....	....	.1	.3	1.	12.	24.	......	1,000,000
771	" 10	" 14	"	"	.4	"	396.	382.	14.	67.	10.	9.2	.8	1.28	.84	.461	.376	....	....	....	.62	1.3	1.	12.	22.	......	830,000
816	" 18	" 20	"	"	.4	"	404.	400.	4.	65.	12.8	8.8	4.	.94	1.28	.616	.664	....	....	....	.7	1.45	1.	15.	21.	......	....
851	" 26	" 27	"	"	.2	"	448.	420.	28.	67.5	14.6	11.4	3.2	1.66	1.32	.592	.728	....	....	....	.8	.25	1.	16.	15.	......	....
887	" 31	Nov. 1	"	"	.3	"	556.	432.	124.	67.	29.4	11.8	17.6	1.88	1.66	.544	1.116	....	....	....	.14	.25	1.5	10.	15.	......	2,680,000
925	Nov. 7	" 9	"	"	.25	"	......	......	......	59.	9.4	8.2	1.2	2.8	.98	.456	.524	....	....	....	.5	.8	1.	6.	16.	......	80,000
965	" 15	" 16	Much	"	.15	"	414.	396.	18.	52.	11.4	8.2	3.2	3.28	.9	.488	.412	....	....	....	.4	.45	2.	10.	16.	......	520,000
998	" 22	" 24	Slight	"	.15	"	395.	386.	10.	52.	7.3	6.2	1.1	3.4	.5	.216	.284	....	....	....	.14	.56	1.5	0.	5.	......	5.000
1059	Dec. 5	Dec. 9	"	"	.25	"	372.	370.	2.	35.	7.	5.6	1.4	1.2	.48	.312	.168	....	....	....	.064	2.7	.5	......	8.	......	20,000
1082	" 13	" 16	Much	"	.25	"	392.	355.	37.	38.	7.6	6.2	1.4	2.4	.46	.32	.14	....	....	....	.09	1.15	2.	......	—1.	......	10.000
1117	" 20	" 23	"	"	.2	"	376.	370.	6.	37.	7.	6.	1.	2.6	.46	.32	.14	....	....	....	.056	1.1	2.	......	0.	......	5.000
1154	" 28	" 29	"	"	.3	"	398.	396.	2.	33.	6.1	6.1	.0	2.98	.36	.296	.064	....	....	....	.05	1.2	2.6	......	—12.	......	....

TABLE 96. STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, PEKIN, ILL.

Report of EDWIN O. JORDAN, University of Chicago.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dis-solv'd	Nitrogen as Ammonia. Albuminoid Am Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
52	May 24	May 25	Distinct	Little	....	None	371.	356.	18.	15.8	9.4	9.4	.0	.64	.36	.36	.0	....	....	....	.08	.8	3.5	18.	25	......	120.000
77	" 30	" 31	"	"	.05	"	429.6	326.4	103.2	15.	10.8	10.4	.4	.64	.48	.392	.088	....	....	....	.104	.1	3.6	24	29.	......	512.000
108	June 6	June 7	Decided	"	.5	"	366.4	318.4	48.	14.	12.8	8.5	4.3	.92	.44	.288	.152	....	....	....	.28	1.	4.7	26.25	31.	......	129.000
137	" 13	" 14	"	"	.4	"	358.	297.6	60.4	12.6	16.3	12.6	3.7	.44	.52	.416	.101	....	....	....	.28	1.22	3.5	24.	20.	......	205.000
179	" 21	" 22	"	"	.5	"	379.2	280.	99.2	14.6	14.	9.9	4.1	.48	.504	.48	.024	....	....	....	.12	.38	2.	26.	31.	......	225.000
220	" 27	" 29	None	"	.4	"	378.4	352.8	25.6	15.3	9.2	7.2	2.	1.12	.96	.52	.44	....	....	....	.26	.9	1.	27.	28.	......	2.030.000
259	July 6	July 7	"	"	.4	"	387.2	342.	45.2	17.8	8.9	5.9	3.	.76	.72	.48	.24	....	....	....	.48	.....	1.	21.	30.	......	520.000
283	" 12	" 13	Decided	"	.5	"	386.	384.	2.	34.25	9.	5.6	3.4	.608	.8	.432	.368	....	....	....	.2	1.45	1.	28.	33.	......	1.435.000
318	" 19	" 19	"	"	.05	"	392.	344.8	47.2	40.	8.6	5.3	3.3	.88	.584	.536	.048	....	....	....	.3	1.35	2.	26.	32.	......	470.000
351	" 25	" 26	Slight	"	.4	"	342.	304.	38.	27.5	7.2	4.6	2.6	.4	.48	.376	.104	....	....	....	.15	.85	1.5	30.	34.	......	980.000
391	Aug. 1	Aug. 2	Distinct	V. Little	.4	"	355.	331.	24.	31.	8.8	5.1	3.7	.94	.704	.544	.16	....	....	....	.44	.7	1.	25.	34.	......	1.940.000
427	" 8	" 9	Slight	Little	.3	"	361.	337.	27.	27.	9.2	5.7	3.5	.58	......	......	......	....	....	....	.24	.7	1.	24.	23.	......	985.000
466	" 15	" 17	None	"	.1	"	416.	362.	54.	31.5	8.1	5.2	3.2	.72	.41	.41	.0	....	....	....	.3	.65	.5	25.	33.	......	....
508	" 22	" 23	Slight	V. Little	.1	"	371.	371.	0.	41.5	8.8	6.6	2.2	.704	.664	.424	.24	....	....	....	.188	1.51	.5	26.	33.	......	10.000
539	" 29	" 30	Distinct	Little	Muddy	"	394.	364.	30.	43.	9.	7.6	1.4	.64	.736	.368	.368	....	....	....	.086	.89	1	29.	40.	......	30.000
582	Sept. 5	Sept. 6	Slight	"	.2	"	380.	336.	44.	48.	9.	7.6	1.4	.336	.6	.328	.272	....	....	....	.056	.5	1.	28.	40.	......	650.000
619	" 12	" 13	"	V. Little	.05	"	397.	360.	37.	50.	8.7	8.	.7	.218	.592	.352	.24	....	....	....	.076	.69	1.	20.	27.	......	310.000
668	" 18	" 22	Decided	Cons'd	.2	"	386.	318.	68.	42.5	9.	7.6	1.1	.8	.728	.21	.488	....	....	....	.07	.49	1.6	20.	21.	......	240.000
693	" 26	" 27	"	Little	.1	"	398.	372.	26.	53.	8.6	8.	.6	.344	.616	.336	.28	....	....	....	.076	.9	1.	15.	18.	......	120.000
733	Oct. 3	Oct. 4	"	"	.25	"	406.	380.	26.	61.	9.	7.6	1.4	.128	.64	.311	.296	....	....	....	.16	1.4	1.	12.	24.	......	500.000
772	" 10	" 11	Slight	"	.35	"	358.	344.	14.	55.	9.	7.8	1.2	.68	.528	.336	.192	....	....	....	.4	.85	1.	12.	12.	......	430.000
807	" 18	" 19	"	"	.3	"	384.	374.	10.	61.	8.6	8.1	.5	.72	.56	.32	.24	....	....	....	.52	1.7	1.	15.	21.	......	....
852	" 26	" 27	"	"	.2	"	456.	414.	42.	67.	11.2	10.4	3.8	1.36	1.16	.472	.688	....	....	....	.56	.....	1.	16.	15.	......	....
888	" 31	Nov. 1	Distinct	"	.25	"	432.	400.	32.	66.	9.8	8.	1.8	.31	.544	.36	.784	....	....	....	.1	1.4	1.5	10.	14.	......	30.000
926	Nov. 7	" 9	Decided	"	.2	"	411.	390.	21.	58.	8.2	6.2	2.	1.76	512	.264	.218	....	....	....	.5	1.15	1.	6.	15.	......	150.000
966	" 15	" 16	Much	"	.1	"	388.	361.	21.	51.	7.2	6.7	.5	2.56	.424	.176	.218	....	....	....	.44	1.	2.	10.	16.	......	30.000
999	" 22	" 24	"	"	.3	"	404.	388.	16.	48.	10.1	7.5	2.9	3.68	.96	.44	.52	....	....	....	.13	.57	1.5	0.	5.	......	1.650.000
1038	" 30	Dec. 2	Slight	"	.32	"	361.	350.	44.	35	5.8	5.2	.6	1.76	.32	.256	.064	....	....	....	.034	.65	1.5	0.	9	......	380.000
1060	Dec. 5	" 8	"	"	.3	"	377.	367.	10.	34	7.8	5.5	2.3	1.46	48	.288	.192	....	....	....	.056	1.55	.5	......	......	......	140.000
1083	" 13	" 14	Much	"	.25	"	388	370.	18.	36.5	7.4	5.9	1.5	2.1	544	.336	208	....	....	....	.044	1.5	2.	......	1.	......	10.000
1118	" 19	" 20	"	"	.2	"	384	366.	18.	38	6.7	6.1	.6	2.88	.344	.312	.032	....	....	....	.056	1.25	2	......	0.	......	5.000
1155	" 28	" 29	"	"	.3	"	426.	401.	22.	34	6.	5.8	.2	3.16	.52	.427	.093	....	....	....	.048	1.3	2.5	......	—12.	......	20.800

TABLE 97.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER — ILLINOIS RIVER. HAVANA, ILL.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am: Tot'l	Albuminoid Am: Dissolv'd	Albuminoid Am: Susp'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
78	May 30	May 31	None	Little	Muddy	None	360.	323.6	36.4	1.04	9.	9.	0.	.32	.358	.31	.048	....	....	....	.102	1.4	8.7	21.	26.	......	4,500
115	June 6	June 7	Decided	"	.4	"	380.	310.4	69.6	13.	11.	8.4	2.6	.56	.32	.28	.04	....	....	....	.18	1.67	9.3	26.	28.	......	18,450
138	" 13	" 14	"	"	.2	"	356.4	309.6	46.8	13.5	9.	9.	0.	.4	.44	.32	.12	....	....	....	.22	1.48	8.8	25.	27.	......	15,900
178	" 20	" 21	"	"	.4	"	335.2	305.6	29.6	12.1	9.8	9.2	.6	.472	.456	.328	.128	....	....	....	.1	.4	7.5	26.	26.	......	2,500
221	" 28	" 29	Distinct	"	.4	"	355.2	320.	35.2	14.9	9.1	5.8	3.3	.88	.64	.512	.128	....	....	....	.12	.88	5.2	25.	27.	......	4,500
254	July 5	July 6	Decided	"	.5	"	417.6	336.8	80.8	14.7	9.1	5.2	3.9	1.12	.52	.52	.0	....	....	....	.2	.25	4.7	26.	24.	......	2,400
289	" 12	" 13	Distinct	"	.5	"	384.	336.	48.	23.	8.5	5.2	3.3	.96	.44	.364	.076	....	....	....	.1	.65	4.1	26.	29.	......	7,300
324	" 19	" 20	Slight	"	.3	"	361.	348.	13.	36.	8.1	5.2	2.9	.88	.44	.4	.04	....	....	....	.22	1.43	4.9	27.	30.	......	5,700
361	" 26	" 27	Distinct	"	.2	"	331.	286.	45.	31.	7.6	4.4	3.2	.84	.424	.376	.048	....	....	....	.29	.71	4.8	30.	35.	......	850
437	Aug. 9	Aug. 10	Much	V. Little	.3	"	381.	305.	79.	27.5	8.6	5.3	3.3	.896	.472	.456	.016	....	....	....	.17	.68	4.1	26.	30.	......	1,550
472	" 16	" 17	Decided	Little	.2	"	434.	352.	82.	30.	8.6	5.	3.6	1.	.544	.48	.064	....	....	....	.14	.56	3.2	25.	27.5	......	....
509	" 23	" 24	"	"	.1	"	426.	356.	70.	34.	8.6	6.3	2.3	.42	.464	.384	.08	....	....	....	.18	.52	3.	26.	31.	......	900
546	" 30	" 31	"	"	.05	"	384.	352.	32.	39.	7.7	7.2	.5	.56	.472	.352	.12	....	....	....	.06	.8	2.2	29.	26.	......	9,800
589	Sept. 6	Sept. 8	Slight	"	.3	"	399.	324.	75.	40.	8.5	8.4	.1	.96	.656	.368	.288	....	....	....	.03	.1	2.4	29.	33.	......	1,900
625	" 13	" 15	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	......	......	......	......	......	......	1,500
659	" 20	" 21	Much	Cons'd	.05	None	386.	285.	101.	35.	9.	7.1	1.9	.78	.592	.352	.24	....	....	....	.056	.25	3.6	14.	12.	......	3,400
699	" 27	" 29	"	"	.3	"	414.	356.	58.	49.	9.2	7.8	1.4	.84	.6	.336	.264	....	....	....	.062	.25	3.	16.	17.	......	3,700
734	Oct. 4	Oct. 5	"	Little	.35	"	444.	375.	68.	52.	9.8	8.	1.8	.4	.72	.368	.352	....	....	....	.3	.2	3.	14.5	13.	......	2,500
780	" 11	" 15	"	"	.3	"	438.	376.	62.	59.	9.	7.9	1.1	.62	.56	.28	.28	....	....	....	.32	.9	2.6	15.	21.	......	6,600
813	" 18	" 19	Distinct	"	.25	"	416.	370.	46.	58.	9.1	8.	1.1	1.5	.64	.352	.288	....	....	....	.52	......	3.2	17.	9.	......	8,800
853	" 25	" 27	"	"	.2	"	426.	382.	44.	60.5	10.	8.	2.	1.36	.6	.36	.24	....	....	....	.4	.4	3.	12.	19.	......	3,900
894	Nov. 1	Nov. 2	Decided	"	.2	"	436.	377.	59.	63.	9.6	8.2	1.4	1.3	.504	.352	.152	....	....	....	.6	.7	3.5	9.	8.	......	7,000
932	" 8	" 10	"	"	.2	"	388.	366.	22.	55.5	9.8	8.2	1.6	2.4	.64	.32	.32	....	....	....	.55	11.1	3.5	7.	15.	......	....
967	" 15	" 17	Much	"	.1	"	386.	370.	16.	51.	8.6	7.6	1.	2.8	.612	.272	.34	....	....	....	.2	1.3	3.7	10.	11.	......	3,300
993	" 22	" 23	Slight	"	.15	"	366.	361.	5.	47.5	6.2	6.2	0.	3.6	.456	.288	.168	....	....	....	.09	.79	4.4	11.	12.	......	128,000
1022	" 29	Dec. 1	Decided	"	.37	"	390.	376.	14.	43.	7.2	6.7	.5	3.32	.576	.336	.24	....	....	....	.048	.65	4.	6.	5.	......	41,600
1055	Dec. 6	" 7	Much	"	.2	"	378.	355.	23.	35.	8.2	7.1	1.1	1.62	.616	.32	.296	....	....	....	.0	1.85	3.8	2.	4.	......	85,000
1089	" 13	" 14	"	"	.2	"	368.	362.	6.	32.5	6.2	4.2	2.	1.574	.68	.352	.328	....	....	....	.106	1.9	4.3	2.	—2.	......	....
1125	" 20	" 22	"	"	.2	"	388.	348.	40.	35.	7.1	6.6	.5	2.2	.36	.136	.224	....	....	....	.06	1.6	4.1	1.	2.	......	66,800

TABLE 98.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—SANGAMON RIVER, CHANDLERVILLE, ILL.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Sus. pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
90	May 31	June 1	Decided	Much	.2	None	356.8	216.	140.8	2.35	15.1	9.6	5.5	......	.432	.32	.112	....	....	....	.06	.5	8.	33.	24.	......	8,400
116	June 7	" 8	"	Little	.6	"	280.	240.	40.	3.2	7.	5.4	1.6	.04	.272	.24	.032	....	....	....	.064	.9	8.	26.5	27.	......	11,600
182	" 21	" 22	"	Cons'd	.0	"	441.	312.	132.	3.3	8.1	4.6	3.5	.034	.352	.152	.200	....	....	....	.056	1.25	5.	27.	32.	......	1,830
255	July 5	July 6	"	"	.3	"	421.6	287.2	134.4	3.6	6.	1.2	4.8	.062	.304	.2	.104	....	....	....	.018	1.4	......	27.	28.	......	3,100
290	" 12	" 13	"	Little	.3	"	392.	354.4	37.6	4.	6.8	1.4	5.4	.052	.272	.128	.144	....	....	....	.016	.75	4.	27.	32.	......	8,350
393	Aug. 3	Aug. 3	Distinct	V. Little	.0	"	355.	290.	65.	1.	4.3	1.	3.3	.044	.208	.208	.0	....	....	....	.001	.45	3.	26.	33.	......	2,100
438	" 9	" 10	Much	Little	.1	"	434.	248.	186.	4.9	7.	3.5	3.5	.08	.32	.264	.056	....	....	....	.048	.75	3.6	25.	29.	......	9,900
473	" 16	" 17	"	"	0	"	370.	300.	70.	5.6	6.	3.6	2.4	.038	.264	.232	.032	....	....	....	.016	1.05	.5	26.	29.	......	....
558	" 31	Sept. 1	"	Cons'd	Muddy	"	......	......	......	1.5	5.8	2.8	3.	.014	.368	.136	.232	....	....	....	.01	.025	......	27.	29.	......	1,200
626	Sept. 13	" 14	Decided	Little	.05	"	361.	202.	162.	4.6	5.	4.8	.2	.022	.261	.264	.0	....	....	....	.006	.15	Low	22.	21.	......	1,900
660	" 20	" 21	Much	Cons'd	0	"	372.	271.	98.	4.7	5.4	3.1	2.3	.03	.32	.12	.2	....	....	....	.002	.25	"	19.	21.	......	11,500
715	" 28	" 29	Slight	Little	.05	"	422.	284.	138.	3.3	5.6	2.8	2.8	.05	.218	.096	.152	....	....	....	.0	.6	"	7.	16.	......	4,200
725	Oct. 4	Oct. 5	Distinct	V. Little	.22	"	320.	298.	22.	1.6	3.5	2.8	.7	.008	.136	.056	.08	....	....	....	.0	.05	"	6.	23.	......	1,300
811	" 18	" 19	"	Little	.1	"	338.	312.	26	3.1	4.5	2.6	1.9	.04	.384	.096	.288	....	....	....	.005	.15	"	12.	22.	......	2,000
868	" 25	" 27	Slight	"	1	"	351.	288.	66.	1.4	4.	2.6	1.4	.074	.208	.104	.104	....	....	....	.1	.3	"	18.5	27.	......	3,200
895	Nov. 1	Nov. 2	Decided	"	.1	"	338.	293.	45.	4.9	1.2	3.6	.6	.026	.152	.128	.024	....	....	....	.006	.5	"	10.	8.	......	1,500
933	" 8	" 10	Slight	"	1	"	301.	285.	19.	5.8	4.1	1.1	.3	.062	.176	.088	.088	....	....	....	.006	1.75	1.	10.	14.	......	10,800
968	" 15	" 16	Decided	"	.0	"	320.	304.	16.	6.2	4.8	4.8	.0	.02	.088	.088	.0	...	....	....	.006	1.	1.	12.	16.	......	....
991	" 22	" 23	Distinct	"	.05	"	334.	288.	46.	6.	4.6	3.6	1.	.098	.216	.096	.12	....	....	....	.022	.25	2.	18.	14.	......	7,900
1023	" 29	Dec. 1	Slight	V. Little	.2	"	331.	322.	9.	......	3.	2.7	.3	.056	.168	.088	.08	....	....	....	.0	.25	1.	8.	11.	......	2,500
1056	Dec. 6	" 7	"	"	.05	"	316.	300.	16.	6.	3.	2.7	.3	.08	.136	.126	.01	....	....	....	.006	.45	4.	3.	5.	......	1,200
1090	" 13	" 14	Decided	Little	.0	"	311.	286.	28.	5.1	3.	2.8	.2	.108	.152	.136	.016	....	....	....	.001	.65	1.6	4.	1.	......	6,400
1126	" 20	" 22	Much	"	.2	"	336	263.	73.	5.4	4.8	2.6	2.2	.161	.024	.008	.016	....	....	....	.015	6	2.6	2.	4.	......	5,900

TABLE 99.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION

SOURCE OF WATER—ILLINOIS RIVER, BEARDSTOWN, ILL.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended.	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
56	May 24	May 25	Decided	Much	....	None	432.	270.4	61.6	10.15	12.1	10.	2.1	.52	.36	.28	.08	....	....	....	.084	.9	10.04	......	27.	......	9,300
91	June 1	June 1	"	Little	.2	"	444.	260.8	183.2	7.	10.9	8.4	2.5	.334	.36	.272	.088	....	....	....	.1	.6	11.08	......	31.	......	5,150
167	" 19	" 20	"	Cons'd	.0	"	570.4	368.	202.4	9.	8.9	8.1	.8	.192	.64	.416	.224	....	....	....	.9	......	9.4	26.	27.	......	5,500
265	July 6	July 7	"	Little	.4	"	411.2	352.	59.2	10.05	7.8	4.2	3.6	.284	.616	.272	.344	....	....	....	.08	.9	7.1	25.	26.5	......	7,800
297	" 13	" 14	Distinct	"	.5	"	376.4	311.2	65.2	16.	8.8	3.6	5.2	.32	.48	.48	.0	....	....	....	.08	.64	6.8	29.	34.	......	4,700
332	" 20	" 21	Decided	"	.3	"	450.	334.4	115.6	31.	8.3	5.2	3.1	.352	.464	.4	.064	....	....	....	.07	1.14	6.9	28.	31.	......	....
375	" 27	" 28	"	"	.3	"	391.	320.	71.	33.	7.4	3.8	3.6	......	.416	.36	.056	....	....	....	.26	.84	6.8	21.	27.	......	1,700
412	Aug. 3	Aug. 4	"	"	.0	"	387.	336.	51.	20.	6.3	3.5	2.8	......	.376	.368	.008	....	....	....	.18	.7	6.4	25.5	31.	......	5,450
415	" 10	" 12	Much	V. Little	.3	"	357.	274.	83.	23.	7.3	4.1	3.2	.16	.36	.36	.0	....	....	....	.18	.7	6.9	21.	27.	.....	3,000
478	" 17	" 18	"	"	.1	"	381.	318.	63.	21.	7.2	4.7	2.5	.48	.352	.328	.024	....	....	....	.084	.49	6.3	23.	27.	.....	....
523	" 24	" 26	"	Much	.2	"	355.	308.	47.	19.2	7.3	7.2	.1	.314	.272	.261	.008	....	....	....	.09	.69	6.2	21.	27.	......	4,200
556	" 31	Sept. 1	"	Little	.0	"	354.	326.	28.	28.	6.8	6.6	.2	.432	......	......	......	....	....	....	.06	.5	6.	20.	27.	......	2,000
595	Sept. 7	" 8	Slight	"	.1	"	363.	324.	39.	28.	6.5	6.1	.4	.416	.368	.296	.072	....	....	....	.03	.1	6.2	25.5	32.	......	8.500
634	" 14	" 15	Much	"	.3	"	354.	290.	64.	25.	7.2	6.	1.2	.416	.456	.328	.128	....	....	....	.034	.45	6.2	15.5	13.	......	1,500
670	" 21	" 22	"	Cons'd	.2	"	348.	236.	112.	22.	8.	6.	2.	.408	.368	.272	.096	....	....	....	.028	.4	7.	21.	16.	......	....
713	" 28	" 29	Slight	"	.25	"	353.	312.	41.	32.5	7.4	6.2	1.2	.672	.328	.248	.08	....	....	....	.036	.25	6.4	15.5	13.	......	3,700
748	Oct. 5	Oct. 7	"	Little	.2	"	356.	346.	10.	38.5	8.2	6.9	1.3	.352	.36	.256	.104	....	....	....	.04	.5	6.2	13.	16.	.....	3,900
787	" 12	" 15	Much	"	.2	"	381.	354.	27.	45.	7.5	6.8	.7	.168	.44	.28	.16	....	....	....	.056	.95	6.3	16.	20.	......	3,500
817	" 19	" 20	"	"	.3	"	366.	290.	76.	40.	7.2	6.8	.4	.8	.392	.248	.144	....	....	....	.07	.49	6.6	18.	14.	......	8,500
867	" 26	" 27	Decided	"	.15	"	390.	336.	54.	49.	6.8	5.8	1.	1.16	.368	.264	.104	....	....	....	.12	.53	6.5	19.	18.	......	2,600
903	Nov. 2	Nov. 3	Much	"	.2	"	418.	372.	46.	49.	8.4	7.4	1.	1.04	.464	.272	.192	....	....	....	.68	1.57	6.7	2.	0.	......	4.800
937	" 9	" 10	"	"	.2	"	390.	380.	10.	52.	9.	7.4	1.6	.52	.696	.272	.424	....	....	....	.55	2.55	6.6	8.	6.	......	23,800
977	" 16	" 17	Decided	"	.05	"	396.	358.	38.	46.	7.	4.8	2.2	1.74	.464	.256	.208	....	....	....	.19	.61	6.8	12.	12.	......	2,400
1006	" 23	" 24	Much	"	.12	"	369.	328.	41.	37.	6.3	5.2	1.1	2.4	.416	.296	.12	....	....	....	.1	.25	7.2	10.	12.	......	7,400
1036	" 30	Dec. 1	Decided	"	.23	"	368.	360.	8.	39.	6.	5.2	.8	2.8	.44	.296	.144	....	...	....	.03	.9	6.6	6.5	6.	......	26.400
1068	Dec. 7	" 11	"	"	Muddy	"	368.	356.	12.	30.	4.	3.3	.7	1.6	.544	.368	.176	....	....	....	.044	1.84	6.4	4.5	8.	......	21,900
1101	" 14	" 16	Much	Cons'd	.22	"	378.	330.	48.	26.5	7.4	6.	1.4	1.3	.52	.184	.336	....	....	...	.06	1.	6.8	—0.	— 6.	......	65.000
1131	" 21	" 22	Decided	Little	.3	"	396.	363.	33.	30.	8.1	6.7	1.4	1.8	.296	.232	.064	....	....	....	.058	1.5	7.7	—0.	— 3.	......	120,000
1158	" 28	" 29	Slight	"	.3	"	380.	368.	12.	32.	7 6	6.9	.7	1.42	.368	.248	.12	....	....	....	.08	.74	7.	—0.	—11.	......	12,500

TABLE 100.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.

SOURCE OF WATER—ILLINOIS RIVER, KAMPSVILLE, ILL.

University of Chicago.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
	1899 Collection	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved	By Suspd Matter	Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Suspnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
87	May 31	June 2	Decided	Much	.3	None	726.	208.	518.	3.8	18.6	8.1	10.5	......	.64	.336	.304	....	....	....	.42	.63	21.	22.	18.	......	8,490
183	June 21	" 22	"	Cons'd	.6	"	502.4	280.8	221.6	6.5	9.	8.7	.3	.068	.464	.312	.112	....	....	....	.034	1.4	17.1	26.	33.	......	....
256	July 5	July 6	"	Little	.3	"	357.6	281.6	76.	8.1	7.	2.2	4.8	.05	.416	.336	.08	....	....	....	.07	.49	16.9	27.	29.	......	7,750
325	" 19	" 20	"	"	.3	"	356.	352.8	3.2	17.5	6.2	4.1	2.1	.06	.32	.312	.008	....	....	....	.4	1.1	16.	29.	33.	......	600
362	" 26	" 27	Distinct	"	.3	"	355.	342.	13.	30.	7.3	4.6	2.7	.09	.28	.272	.008	....	....	....	.16	1.41	15.9	29.	35.5	......	900
394	Aug. 2	Aug. 3	Decided	V. Little	.05	"	310.	383.	27.	21.	6.2	3.6	2.6	.044	.368	.296	.072	....	....	....	.08	.94	15.9	28.	37.	......	2,950
452	" 11	" 12	Much	Much	.4	"	442.	178.	264.	8.	8.4	4.8	3.6	.03	.376	......	......	....	....	....	.08	1.13	16.5	27.	31.	......	....
510	" 23	" 24	Decided	Little	.1	"	342.	306.	36.	15.8	7.	5.	2.	.058	.280	.280	.0	....	....	....	.048	.4	15.5	28.	32.	......	550
547	" 30	Sept. 1	"	"	.05	"	329.	290.	39.	18.	7.	6.4	.6	.068	.392	.256	.136	....	....	....	.1	.75	15.2	29.	32.	......	....
580	Sept. 6	" 8	Distinct	"	.05	"	314.	275.	39.	19.	6.8	6.1	.7	.188	.41	.384	.056	....	....	....	.03	.15	15.1	29.	32.	......	710
627	" 13	" 14	Much	"	1	"	356.	316.	40.	13.	7.2	6.1	1.1	.156	.328	.264	.064	....	....	....	.07	.59	15.3	22.	20.	......	340
661	" 20	" 21	"	Cons'd	.05	"	316.	215.	101.	17.	7.	6.	1.	.366	.392	.248	.144	....	....	....	.036	.45	15.6	19.	18.	......	4,400
700	" 27	" 29	"	Little	.25	"	320.	282.	38.	24.	6.8	6.4	.4	.358	.272	.224	.048	....	....	....	.016	.55	15.3	17.	18.	......	3,300
745	Oct. 4	Oct. 7	"	"	.2	"	318.	268.	50.	25.	6.8	6.4	.4	.256	.304	.192	.112	....	....	....	.024	.6	15.3	16.	19.	......	....
778	" 11	" 14	"	"	.25	"	346.	338.	8.	29.	7.	6.6	.4	.168	.344	.256	.088	....	....	....	.024	.55	15.2	17.	22.	......	520
815	" 18	" 20	Distinct	"	.15	"	354.	326.	28.	36.	6.9	5.8	1.1	.128	.344	.24	.104	....	....	....	.03	.5	15.5	17.	14.	......	5,100
854	" 25	" 27	"	"	.2	"	354.	306.	48.	36.	7.	6.	1.	.204	.264	.232	.032	....	....	....	.04	.4	15.4	17.5	23.	......	1,300
910	Nov. 1	Nov. 4	Much	"	2	"	352.	342.	10.	39.	6.8	6.4	.4	.48	.344	.216	.128	....	....	....	.036	.05	15.6	12.	9.	......	2,300
969	" 15	" 16	Decided	"	1	"	364.	320.	44.	41.	7.	6.6	.4	.24	1.072	.288	.782	....	....	....	.2	.65	15.7	12.	15.	......	1,800
995	" 22	" 23	Much	"	.15	"	358.	324.	34.	31.5	8.	5.2	2.8	.6	.664	.224	.44	....	....	....	.06	.8	16.	12.	13.	......	19,100
1024	" 29	Dec. 1	"	"	.32	"	348.	328.	20.	31.	6.3	5.5	.8	1.328	.36	.216	.144	....	....	....	.034	.6	15.7	11.	12.	......	4,300
1069	Dec. 6	" 11	Decided	"	Muddy	"	358.	358.	0.	32.5	3.	2.5	.5	1.312	.52	.28	.24	....	....	....	.04	1.15	15.6	5.5	9.	......	3,500
1097	" 13	" 15	Much	"	.15	"	340.	320.	20.	25.	8.1	5.6	2.5	.464	.64	.2	.44	....	....	....	.05	1.85	15.8	4.	− 1.	......	....
1138	" 20	" 23	"	"	.22	"	344.	282.	62.	19.	6.5	5.6	.9	.72	.36	.16	.20	....	....	....	.036	1.15	16.	2.	3.	......	23,500
....	....	......	....	....	....	....	......	......	....	......	....	....	....	......	......	......	......	....	....	....	....	....	......	......	......	......	....

TABLE 101.

STREAMS EXAMINATION--SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.

SOURCE OF WATER—ILLINOIS RIVER, GRAFTON, ILL.

University of Chicago.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
22	May 10	May 10	Decided	Cons'd	....	None	308.	270.	38.	6.12	8.6	7.5	1.1	.5	......	......	......	....	....	....	.....	.6	......	......	......	......	....
39	" 17	" 20	"	Much	....	"	430.	330.	100.	8.2	13.2	12.7	.5	.104	.3	.28	.02	....	....	....	.038	.5	......	......	......	......	....
54	" 24	" 25	Distinct	Little	....	"	340.	269.6	70.4	6.8	8.4	8.1	.3	.122	.32	.31	.02	....	....	....	.06	.45	17.5	......	......	......	1.690
89	" 31	June 1	Decided	Much	.3	"	1147.8	264.	873.8	3.7	18.3	8.6	9.7	......	.72	.344	.376	....	....	....	.036	1.05	16.1	21.	26.	......	5.730
117	June 7	" 8	"	Cons'd	.6	"	400.	244.	156.	5.1	10.4	7.8	2.6	.045	.392	.312	.08	....	....	....	.0084	1.3	16.7	22.	30.	......	17.000
144	" 14	" 15	"	Little	.6	"	399.2	251.2	148.	7.35	8.9	8.	.9	.062	.416	.24	.176	....	....	....	.0075	.5	14.1	26.	29.	......	97.000
184	" 21	" 22	"	"	.6	"	340.	254.	86.	5.6	8.3	8.	.3	.04	.352	.344	.008	....	....	....	.026	.75	......	26.	31.	......	30,000
222	" 28	" 30	"	"	.4	"	317.2	284.	33.2	8.	7.	5.	2.1	.056	.288	.284	.004	....	....	....	.036	.5	......	28.	31.	......	....
257	July 5	July 6	"	"	.3	"	310.8	276.	34.8	7.5	6.8	3.8	3.	.058	.320	.312	.008	....	....	....	.05	.7	17.6	29.	28.	......	9.000
291	" 12	" 13	Distinct	"	.3	"	291.2	272.8	18.4	9.	6.9	3.4	3.5	.224	.352	.32	.032	....	....	....	.08	.44	13.2	29.	32.	......	6.000
326	" 19	" 20	Decided	"	.0	"	324.	295.4	28.6	11.8	7.	4.4	2.6	.112	.408	.252	.156	....	....	....	.058	.74	9.7	33.	36.	......	4.000
363	" 26	" 27	Distinct	"	.3	"	344.	328.	16.	21.1	7.	4.8	2.2	.066	.36	.336	.024	....	....	....	.0572	.59	7.6	34.	37.	......	11.500
395	Aug. 2	Aug. 3	Decided	V. Little	.2	"	364.	316.	48.	28.8	6.6	3.6	3.	.072	.376	.336	.04	....	....	....	.084	1.14	6.1	33.	37.	......	....
439	" 9	" 10	Much	Little	Muddy	"	388.	237.	151.	12.7	7.2	4.2	3.	.088	.336	.244	.092	....	....	....	.084	.84	7.6	25.	28.	......	15,050
479	" 16	" 18	"	"	.5	"	291.	188.	103.	7.2	8.3	5.2	3.4	.06	.344	.24	.104	....	....	....	.04	.4	6.	26.	29.	......	....
511	" 21	" 24	Decided	"	.2	"	346.	286.	60.	14.6	7.2	5.	2.2	.057	.352	.272	.08	....	....	....	.048	.5	4.2	31.	31.	......	1.400
548	" 30	" 31	Much	"	.05	"	330.	268.	62.	13.4	7.	7.	.0	.062	.256	.248	.008	....	....	....	.04	.75	3.3	30.	31.	......	1,400
591	Sept. 6	Sept. 8	Distinct	"	.05	"	337.	293.	44.	19.	6.4	6.2	.2	.178	.376	.272	.104	....	....	....	.036	.15	3.4	35.	36.	......	1.330
628	" 13	" 14	Much	V. Little	.1	"	346.	296.	50.	17.8	7.1	6.	1.1	.252	.328	.256	.072	....	....	....	.036	.45	4.4	24.	22.	......	480
662	" 20	" 21	"	Little	.05	"	360.	290.	70.	21.2	7.3	6.	1.3	.24	.288	.248	.04	....	....	....	.022	.45	4.8	20.	19.	......	1.340
701	" 27	" 29	"	"	.25	"	302.	268.	34.	22.5	6.6	6.2	.4	.368	.304	.200	.104	....	....	....	.024	.5	4.7	19.	20.	......	1.500
746	Oct. 4	Oct. 6	"	"	.25	"	288.	240.	48.	19.1	6.6	6.4	.2	.248	.264	.184	.08	....	....	....	.016	.95	......	18.	20.	......	1.200
779	" 11	" 14	"	"	.2	"	320.	319.	1.	27.8	6.5	6.	.5	.168	.341	.184	.16	....	....	....	.028	1.	3.2	17.	21.	......	800
855	" 25	" 27	"	"	.2	"	329.	277.	52.	29.	6.8	6.2	.6	.12	.28	.208	.072	....	....	....	.02	.3	2.7	19.	24.	......	440
896	Nov. 1	Nov. 2	"	"	.3	"	366.	250.	116.	27.5	8.4	7.	1.4	.328	.344	.256	.088	....	....	....	.03	.5	3.4	18.	10.	......	1.500
934	" 8	" 10	"	"	.2	"	350.	336.	14.	40.	6.4	5.6	.8	.44	.304	.216	.088	....	....	....	.056	1.25	5.4	9.	17.	......	830
970	" 15	" 16	"	Cons'd	.08	"	340.	290.	50.	40.	6.6	6.2	.4	.264	.96	.28	.68	....	....	....	.15	.4	6.2	10.	11.	......	580
996	" 22	" 23	"	Little	.15	"	391.	300.	91.	30.	8.3	4.6	3.7	.128	.64	.192	.448	....	....	....	.056	1.	6.	13.	17.	......	3,600
1025	" 29	Dec. 1	"	"	.35	"	358.	317.	41.	26.	6.4	5.2	1.2	1.064	.328	.221	.101	....	....	....	.042	1.	5.9	8	12.	......	5,200
1057	Dec. 6	" 7	"	"	.2	"	362.	325.	37.	32.5	6.3	4.4	1.9	1.12	.48	.176	.304	....	....	....	.04	1.15	4.3	3.	6.	......	1,390
1098	" 13	" 15	"	"	.15	"	354.	330.	24.	25.	7.6	5.6	2.	.192	.64	.200	.44	....	....	....	.022	1.15	4.3	3.	0.	......	2.200
1127	" 20	" 22	"	"	.3	"	378.	300.	78.	......	7.3	5.	2.3	.296	.301	.08	.224	....	....	....	.034	1.15	4.4	2.	6.	......	29.160
1156	" 27	" 29	"	"	.2	"	480.	342.	138.	22.	5.6	4.3	1.3	.96	.504	.176	.328	....	....	....	.036	.3	2.1	0.	1.	......	35,000

TABLE 102.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, GRAFTON, ILL.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
23	May 10	May 10	Much	Much	....	None	476.	140.	336.	.2	14.6	9.5	5.1	.3	.5	.21	.29	....	....	....	.....	.1	17.	......	.....	......	....
40	" 17	" 20	Decided	"	....	"	980.	145.	835.	1.7	36.	16.7	19.3	.044	.12	.25	.95	....	....	....	.006	.3	.....	......	.....	......	....
55	" 24	" 25	Distinct	"	....	"	1593.6	143.2	1450.4	1.6	24.3	9.	15.3	.08	1.12	.32	.8	....	....	....	.022	.05	17.5	......	.....	......	8,000
88	" 31	June 1	Decided	"	.3	"	898.4	159.6	738.8	.2	22.5	11.	11.5	......	1.12	.352	.768	....	....	....	.015	.7	16.1	23.	26.	......	8,940
118	June 7	" 8	"	"	.5	"	1531.2	144.8	1386.4	1.6	19.	8.6	10.4	.054	1.16	.312	.848	....	....	....	.002	.95	16.7	23.	30.	......	26,000
145	" 14	" 15	"	"	.8	"	505.2	115.6	359.6	1.8	18.	12.8	5.2	.058	.68	.272	.408	....	....	....	.01	1.5	14.1	24.	29.	......	31,000
185	" 21	" 22	"	Cons'd	.8	"	417.6	152.	255.6	1.5	16.9	14.1	2.8	.072	.52	.336	.184	....	....	....	.012	.45	......	27.	31.	......	16,000
223	" 28	" 30	"	"	.4	"	389.6	148.	241.6	1.3	9.4	9.4	.0	.066	.44	.288	.152	....	....	....	.004	.4	......	26.5	31.	......	9,000
258	July 5	July 6	"	Little	.9	"	303.2	147.2	156.	.6	15.6	12.5	3.1	.04	.464	.304	.16	....	....	....	.0	.25	14.6	26.	28.	......	5,000
292	" 12	" 13	"	Cons'd	.8	"	468.	151.6	316.4	1.7	26.2	5.6	20.6	.066	.64	.296	.344	....	....	....	.001	.3	13.2	27.	32.	......	15,000
327	" 19	" 20	"	"	.1	"	292.	170.4	121.6	1.7	9.	4.7	4.3	.076	.48	.304	.176	....	....	....	.0	.0	9.7	28.	36.	......	6,500
364	" 26	" 27	Much	"	.5	"	276.	182.	94.	2.1	9.2	5.6	3.6	.056	.364	.2	.164	....	....	....	.0	.0	7.6	30.	37.	......	1,500
396	Aug. 2	Aug. 3	Decided	Little	.3	"	240.	178.	62.	2.8	8.2	5.4	2.8	.08	.384	.256	.328	....	....	....	.0	.0	6.1	28.	37.	......	....
440	" 9	" 10	Much	"	.3	"	456.	167.	289.	2.9	9.3	6.3	3.	.052	.368	.272	.096	....	....	....	.004	.0	7.6	26.	28.	......	1,300
480	" 16	" 18	"	"	.4	"	312.	158.	154.	2.1	8.8	5.5	3.3	.052	.424	.24	.184	....	....	....	.006	.0	6.	27.	29.	......	....
512	" 23	" 24	Decided	"	.0	"	257.	161.	93.	3.1	8.6	8.	.6	.022	......	......	......	....	....	....	.0	.0	4.2	26.	31.	......	900
519	" 30	" 31	"	"	.05	"	256.	186.	70.	3.	7.2	6.5	.7	.05	.252	.16	.092	....	....	....	.0	.0	3.3	28.	31.	......	1,400
592	Sept. 6	Sept. 8	Distinct	"	.05	"	252.	172.	80.	2.7	7.6	6.3	1.3	.052	.36	.128	.232	....	....	....	.002	.05	3.4	30.	36.	......	1,300
629	" 13	" 14	Much	"	.1	"	279.	178.	101.	2.6	8.2	6.1	2.1	.004	.440	.152	.288	....	....	....	.0	.025	4.4	23.	22.	......	1,800
663	" 20	" 21	"	Cons'd	.2	"	270.	163.	107.	2.8	9.	6.8	2.2	.031	.392	.176	.216	....	....	....	.002	.15	4.8	20.	19.	......	2,000
702	" 27	" 29	"	"	.4	"	250.	158.	92.	2.5	9.2	7.8	1.4	.05	.464	.192	.272	....	....	....	.006	.0	4.1	18.	20.	......	2,200
747	Oct. 4	Oct. 6	Slight	Little	.3	"	224.	182.	42.	2.6	13.	9.3	3.7	.028	.352	.216	.136	....	....	....	.0	.5	......	16.	20.	......	4,500
780	" 11	" 14	Much	Cons'd	.4	"	241.	171.	66.	3.	9.5	8.8	.7	.001	.512	.176	.336	....	....	....	.0	.0	3.2	16.	21.	......	1,500
856	" 25	" 27	Decided	"	.2	"	220.	184.	36.	3.2	9.8	7.1	2.4	.02	.296	.152	.144	....	....	....	.0	.025	2.7	18.	21.	......	1,700
897	Nov. 1	Nov. 2	Much	Little	.3	"	258.	160.	98.	3.5	8.6	7.2	1.4	.014	.376	.128	.248	....	....	....	.0	.0	3.4	16.5	10.	......	2,600
935	" 8	" 10	"	"	.3	"	248.	168.	80.	3.	9.8	9.	.8	.04	.36	.2	.16	....	....	....	.0	.5	5.4	9.	17.	......	5,800
971	" 15	" 16	"	Cons'd	.25	"	210.	116.	64.	2.	13.8	11.8	2.	.036	.288	.216	.072	....	....	....	.0	.2	6.2	10.	14.	......	5,400
997	" 22	" 23	"	Little	.5	"	254.	142.	112.	2.	9.8	9.4	.4	.01	.36	.216	.114	....	....	....	.03	.05	6.	12.	17.	......	6,300
1026	" 29	Dec. 1	"	"	.6	"	172.	158.	14.	3.6	12.	8.8	3.4	.05	.261	.261	.0	....	....	....	.0	.25	5.9	7.	12.	......	1,700
1058	Dec. 6	" 7	"	"	.6	"	178.	144.	34.	3.2	9.6	9.4	.2	.228	.304	.184	.12	....	....	....	0	.0	4.3	3.	6.	......	1,100
1099	" 13	" 15	"	"	.22	"	186.	163.	23.	3.4	11.2	10.2	1.	.04	.296	.24	.056	....	....	....	.0	.1	4.3	3.	0.	......	800
1128	" 20	" 22	"	"	.43	"	200.	182.	18.	3.8	9.4	9.2	.2	.006	.128	.021	.101	....	....	....	.002	.1	4.4	1.	6.	......	3,100
1157	" 27	" 29	"	"	.3	"	356.	311.	12.	18.6	5.8	5.	.8	.80	.504	.208	.296	....	....	....	.034	.85	2.1	0.	-1.	......	15,000

TABLE 103.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 FEET FROM ILLINOIS SHORE, ALTON, ILL.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Free Ammonia.	Nitrogen as Ammonia, Albuminoid Am: Tot'l	Albuminoid Am: Dissolv'd	Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
25	May 10	May 13	Much	Much	......	None	556.	214.	342.	6.6	13.2	10.	3.2	.025	.41	.26	.15	....	....	....	.024	.3	......	......	......	......	....
57	" 24	" 25	Decided	"	......	"	688.8	189.6	499.2	3.9	17.6	9.4	8.2	.048	.88	.28	.60	....	....	....	.03	.55	17.5	18.	16.	......	3,470
82	" 31	June 1	"	"	Muddy	"	862.4	195.2	667.2	3.	19.9	8.	11.9	.065	.64	.264	.376	....	....	....	.038	1.	16.5	21.	20.	......	17,400
121	June 8	" 9	"	"	.5	"	588.	232.8	355.2	3.6	14.8	7.2	7.6	.046	.56	.336	.224	....	....	....	.005	1.4	16.1	18.	16.	......	25,000
139	" 15	" 15	"	Cons'd	.3	"	436.4	189.6	246.8	6.2	14.1	7.	7.1	.078	.52	.264	.256	....	....	....	.006	.5	17.	19.	20.	......	14,500
186	" 22	" 22	"	"	.6	"	376.	208.	168.	3.9	9.8	8.2	1.6	.070	.44	.336	.104	....	....	....	.014	1.2	14.4	19.	21.	......	11,000
215	" 28	" 29	"	"	.5	"	368.	182.	188.	2.7	8.5	5.	3.5	.064	.48	.288	.192	....	....	....	.014	.5	13.5	27.	32.	......	39,000
248	July 5	July 6	"	Little	.8	"	277.6	178.4	99.2	2.8	8.9	8.9	.0	.056	.44	.352	.088	....	....	....	.016	.4	15.3	26.	27.	......	5,000
284	" 12	" 13	"	Cons'd	.5	"	304.	181.6	122.4	4.35	14.2	5.6	8.6	.062	.408	.336	.072	....	....	....	.002	.3	15.8	29.	28.	......	5,500
319	" 19	" 20	"	Little	.05	"	276.	204.8	71.2	4.65	8.6	5.6	3.	.09	.392	.336	.056	...	....	....	.018	.35	12.2	28.	31.	......	3,000
356	" 26	" 26	Much	"	.3	"	316.	254.	62.	9.5	8.1	5	3.1	.038	.32	.272	.048	....	....	....	.018	.8	9.	30.	31.	......	5,500
397	Aug. 2	Aug. 3	Decided	"	.3	"	292.	236.	56.	15.7	7.7	4.2	3.5	.098	.288	.184	.104	....	....	....	.038	.85	7.2	29.	32.	......	5,500
432	" 9	" 10	Much	Cons'd	.3	"	642.	242.	400.	12 2	14.6	4.9	9.7	.114	......	......	......	....	....	....	.6	.15	7.1	26.	28.	......	9,500
467	" 16	" 17	"	"	.3	"	351.	168.	183.	5.5	8.7	5.1	3.6	.09	.36	.264	.096	....	....	....	.04	.4	7.2	26.	30.	......	....
541	" 30	" 31	"	Little	.1	"	240.	215.	25.	6.6	7.2	7.	.2	.024	.304	.224	.08	....	....	....	.12	.05	3.1	28.	28.	......	1,200
584	Sept. 6	Sept. 7	Decided	"	0	"	254.	178.	76.	7.2	6.8	6.8	.0	.072	.372	.248	.124	....	....	....	.01	.1	2.9	30.	29.	......	900
620	" 13	" 14	Much	"	.1	"	286.	191.	95.	6.	7.6	7.	.6	.03	.36	.192	.168	....	....	....	.076	.2	3.6	24.	22.	......	....
654	" 20	" 21	"	"	.2	"	316.	210.	106.	9.6	8.	7.4	.6	.048	.352	.2	.152	....	....	....	.012	.3	4.	20.	20.	......	3,000
694	" 27	" 28	"	"	.4	"	252.	188.	64.	7.2	9.	8.	1.	.062	.336	.2	.136	....	....	....	.0075	.4	3.8	18.	19.	......	2,300
736	Oct. 4	Oct. 5	"	"	.4	"	258.	178.	80.	5.7	9.	8.3	.7	.048	.36	.152	.208	....	....	....	.005	.05	2.8	15.	16.	......	2,200
773	" 11	" 14	"	"	.4	"	250.	186.	64.	6.5	9.3	8.1	1.2	.028	.4	.2	.2	....	....	....	.012	.2	2.2	16.	17.	......	1,700
808	" 18	" 19	"	"	.35	"	254.	204.	50.	9 2	8.6	7.1	1.5	.016	.32	.224	.096	....	....	....	.008	.55	2.1	18.	20.	......	....
846	" 25	" 26	"	"	.25	"	251.	230.	21.	9.55	7.6	7.6	.0	.02	.336	.256	.08	....	....	....	.02	.5	1.9	18.	19.	......	2,600
889	Nov. 1	Nov. 2	"	Cons'd	.3	"	308.	184.	124.	11.4	8.4	7.2	1.2	.104	.496	.264	.232	....	....	....	.009	.2	2.3	12.	10.	......	6,250
927	" 8	" 9	"	"	.22	"	274.	204.	70.	10.8	9.8	7.2	2.6	.092	.368	.208	.16	....	....	....	.01	.15	3.9	9.	12.	......	....
972	" 15	" 16	"	"	.2	"	247.	179.	68.	10.8	15.	14.4	.6	.086	.44	.208	.232	....	....	....	.028	.3	5.4	10.	13.	......	2,700
1027	" 29	Dec. 1	"	Little	.6	"	246.	210.	36.	15.4	8.6	8.	.6	.324	.296	.208	.088	....	....	....	.013	.4	3.8	8.	12.	......	1,800
1084	Dec. 13	" 14	"	"	.4	"	217.	200.	17.	10.5	8.	6.2	1.8	.13	......	......	......	....	...	....	.008	.425	3.	4.	1.	......	7,800
1120	" 20	" 21	"	"	.3	"	252.	236.	16.	9.9	8.2	6.3	1.9	.17	.4	.192	.208	....	....	....	.012	.55	3.	0.	0.	......	12,700
....	....	....	....	....	....	....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	....	....	....	.....	.....	.....	......	....

TABLE 104.

STREAMS EXAMINATION — SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, ONE-FOURTH DISTANCE FROM ILLINOIS SHORE, ALTON, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Susp'd Matter	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Susp'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
26	May 10	May 13	Much	Much	....	None	412.	200.	212.	3.15	15.1	10.1	5.	.03	.44	.21	.23	....	....	....	.0018	.05	......	......	......	......	......
58	" 21	" 25	Decided	"	....	"	.....	.....	.....	2.6	21.9	9.5	12.4	.048	.88	.4	.48	....	....	....	.024	.35	17.5	18.	16.	.....	5,800
84	" 31	June 1	"	"	Muddy	"	910.8	198.4	742.4	3.3	20.9	9.4	11.5	.061	.88	.256	.624	....	....	....	.036	.95	16.5	21.	20.	.....	9,500
122	June 8	" 9	"	"	.5	"	691.2	224.	467.2	1.7	17.7	13.7	4.	.046	.88	.368	.512	....	....	....	.004	.85	16.1	18.	16.	.....	24,500
110	" 15	" 15	"	"	.4	"	486.	161.	322.	2.3	17.4	12.	5.4	.078	.78	.272	.508	....	....	....	.008	.95	17.	19.	20.	.....	18,000
187	" 22	" 22	"	Cons'd	.6	"	356.	175.2	180.8	2.	15.6	9.	6.6	.08	.44	.336	.104	....	....	....	.01	.7	14.4	19.	21.	.....	13,000
216	" 28	" 29	"	"	.5	"	341.6	156.	185.6	1.6	14.8	5.1	9.7	.076	.48	.232	.248	....	....	....	.005	.6	13.5	27.	32	.....	7,000
249	July 5	July 6	"	Little	.9	"	250.4	154.4	96.	1.1	14.9	11.	3.9	.048	.44	.436	.001	....	....	....	.004	.3	15.3	26.	27.	.....	8,000
285	" 12	" 13	"	Cons'd	.5	"	405.6	157.6	248.	2.	15.6	6.	9.6	.102	.504	.336	.168	....	....	....	.001	.4	15.8	29.	28.	.....	7,000
320	" 19	" 20	"	Little	.3	"	251.	176.6	74.4	3.45	13.	5.8	7.2	.084	.392	.28	.112	....	....	....	.04	.35	12.2	28.	31.	.....	3,500
357	" 26	" 27	Much	"	.5	"	312.	201.	111.	4.8	9.	5.6	3.4	.06	.384	.264	.120	....	....	....	.01	.45	9.	30.	34.	.....	7,500
398	Aug. 2	Aug. 3	Decided	V. Little	.3	"	226.	188.	38.	5.8	8.4	5.2	3.2	.014	.28	.208	.072	....	....	....	.014	.3	7.2	29.	32.	.....	2,500
133	" 9	" 10	Much	"	.3	"	431.	291.	140.	7.5	9.	4.9	4.1	.06	.408	.272	.136	....	....	....	.46	.01	7.	26.	28.	.....	4,500
168	" 16	" 17	"	Cons'd	.4	"	321.	162.	162.	3.2	7.2	5.6	1.6	.07	.376	.256	.12	....	....	....	.0	.0	7.2	26.	30	.....	
542	" 30	" 31	"	Little	.05	"	260.	205.	55.	5.6	6.8	6.8	.0	.05	.344	.192	.152	....	....	....	.008	.2	3.1	28.	28	.....	1,250
585	Sept. 6	Sept. 7	"	"	.0	"	247.	174.	73.	5.2	6.3	6.3	.0	.062	.368	.16	.208	....	....	....	.008	.05	2.9	30	29.	.....	900
621	" 13	" 14	"	"	.1	"	272.	179.	93.	5.1	7.6	6.5	1.1	.016	.328	.184	.144	....	....	....	.006	.15	3.6	21.	22.	.....	....
655	" 20	" 21	"	"	.1	"	300.	191.	109.	7.8	8.	7.3	.7	.02	.352	.208	.144	....	....	....	.009	.2	4.	20.	26.	.....	5,400
695	" 27	" 28	"	"	.4	"	256.	172.	81.	5.4	9.3	8.3	1.	.043	.32	.2	.12	....	....	....	.006	.002	3.8	18.	19.	.....	2,200
737	Oct. 4	Oct. 5	"	"	.4	"	252.	166.	86.	5.	9.2	8.7	.5	.016	.368	.152	.216	....	....	....	.005	.05	2.8	15	16.	.....	1,900
774	" 11	" 14	"	"	.4	"	254.	188.	66.	6.3	9.3	8.3	1.	.018	.352	.16	.192	....	....	....	.0	.3	2.2	16.	17.	.....	1,300
809	" 18	" 19	"	"	.25	"	268.	186.	82.	9.3	8.6	7.4	1.2	.016	.288	.192	.096	....	....	....	.007	.1	2.1	18.	19	.....	
847	" 25	" 26	"	"	.25	"	243.	191.	52.	9.6	6.6	6.6	.0	.038	.36	.2	.16	....	....	....	.011	.45	1.9	18.	19.	.....	....
890	Nov. 1	Nov. 2	"	Cons'd	.2	"	270.	170.	100.	9.4	9.6	8.	1.6	.128	.352	.2	.152	....	....	....	.008	.25	2.3	12.	10.	.....	2,100
928	" 8	" 9	"	"	.25	"	262.	186.	76.	6.8	9.2	7.6	1.6	.072	.352	.176	.176	....	....	....	.008	.15	3.9	9.	12.	.....	.....
973	" 15	" 16	"	"	.2	"	236.	161.	75.	7.	15.4	15.	.4	.044	.132	.232	.2	....	....	....	.02	.25	5.1	10.	13.	.....	1,700
1028	" 29	Dec. 1	"	Little	.6	"	220.	198.	22.	10.2	10.	8.4	1.6	.312	.296	.208	.088	....	....	....	.01	.3	3.8	8.	12.	.....	1,900
1085	Dec. 13	" 14	"	"	.4	"	214.	188.	26.	9.3	9.	7.8	1.2	.08	.116	.176	.24	....	....	....	.01	.1	3.	4.	1.	.....	
1121	" 20	" 21	"	"	.3	"	246.	215.	31	9.4	8.1	7.1	1.	.158	.124	.192	.232	....	....	....	.012	.5	3	0.	0.	.....	40,400

TABLE 105.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, ALTON, ILL.

Report of EDWIN O. JORDAN, University of Chicago.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
27	May 10	May 13	Much	Much	....	None	502.	136.	366.	3.2	15.9	10.2	5.7	.02	.53	.21	.32	....	....	....	.02	.1	......	......	......	......	....
59	" 24	" 25	Decided	"	....	"	1165.6	128.8	1036.8	2.1	12.	9.4	2.6	.08	......	......	......	....	....	....	.016	.35	17.5	18.	16.	......	7.160
83	" 31	June 1	"	"	Muddy	"	1170.4	128.8	1041.6	1.7	23.1	20.1	3.	.09	1.16	.221	.936	....	....	....	.01	.6	16.5	21.	20.	......	13.750
123	June 8	" 9	"	"	.5	"	800.	224.	576.	1.3	18.8	13.8	5.	.08	.92	.376	.544	....	....	....	.001	.95	16.1	18.	16.	......	27.500
141	" 15	" 15	"	"	.4	"	520.	142.4	377.6	1.5	18.	9.1	8.9	.078	.76	.248	.512	....	....	....	.007	.9	17.	19.	20.	......	22.500
188	" 22	" 22	"	Cons'd	.9	"	448.	166.4	281.6	1.6	18.1	13.3	4.8	.056	.44	.336	.104	....	....	....	.044	.4	14.4	19.	21.	......	7,000
217	" 28	" 29	"	"	.5	"	400.	145.6	254.4	.75	8.3	5.	3.3	.068	.544	.288	.256	....	....	....	.004	.45	13.5	27.	32.	......	6.500
250	July 5	July 6	"	"	.9	"	269.2	136.	133.2	.8	16.	11.8	4.2	.074	.4	.328	.072	....	....	....	.002	.45	15.3	26.	27.	......	8.000
286	" 12	" 13	"	Much	.5	"	514.4	160.	354.4	2.25	17.2	6.	11.2	.072	.72	.344	.376	....	....	....	.001	.3	15.8	29.	28.	......	10,000
321	" 19	" 20	"	Little	.3	"	278.	176.	102.	2.15	8.5	5.8	2.7	.084	.464	.344	.120	....	....	....	.0	.2	12.2	28.	31.	......	9.000
358	" 26	" 27	Much	Cons'd	.5	"	304.	192.	112.	2.5	9.2	5.5	3.7	.046	.44	.264	.176	....	....	....	.012	.45	9.	30.	39.	......	6,000
399	Aug. 2	Aug. 3	"	Little	.3	"	231.	164.	67.	2.7	8.5	5.5	3.	.05	.376	.248	.128	...	....	....	.0	.0	7.2	28.	32.	......	1,000
434	" 9	" 13	"	"	.4	"	315.	175.	140.	3.1	9.	5.5	3.5	.06	.336	.264	.072	....	....	....	.006	.0	7.	26.	28.	......	3.000
469	" 16	" 17	"	Cons'd	.4	"	336.	146.	190.	2.6	9.3	5.7	3.6	.07	.36	.272	.088	....	....	....	.0	.0	7.2	26.	30.	......	....
543	" 30	" 31	"	Little	.05	"	251.	196.	55.	4.5	6.8	6.2	.6	.05	.66	.2	.46	....	....	....	.006	.05	3.1	28.	28.	......	700
586	Sept. 6	Sept. 7	Decided	"	.0	"	255.	166.	89.	4.1	6.9	6.2	.7	.048	.7	.2	.5	....	....	....	.002	.05	2.9	30.	29.	......	900
622	" 13	" 14	Much	"	.1	"	285.	166.	119.	3.5	7.6	6.8	.8	.03	.376	.192	.184	....	....	....	.0	.15	3.6	24.	22.	......	....
656	" 20	" 21	"	"	.4	"	292.	180.	112.	5.2	8.3	7.	1.3	.006	.352	.2	.152	....	....	....	.008	.2	4.	20.	20.	......	1.300
696	" 27	" 28	"	"	.4	"	262.	162.	100.	3.5	9.3	7.8	1.5	.032	.432	.2	.232	....	....	....	.0	.002	3.8	18.	19.	......	2.200
738	Oct. 4	Oct. 5	"	Cons'd	.5	"	289.	157.	132.	3.8	9.8	8.1	1.7	.018	.432	.16	.272	....	....	....	.005	.05	2.8	15.	16.	......	2.600
775	" 11	" 14	"	Little	.4	"	256.	164.	92.	4.1	9.2	8.1	1.1	.042	.344	.16	.184	....	....	....	.0	.3	2.2	16.	17.	......	1,700
810	" 18	" 19	"	"	.25	"	266.	164.	102.	8.6	9.	7.7	1.3	.016	.24	.16	.08	....	....	....	.007	.0	2.1	18.	20.	......	....
848	" 25	" 26	"	"	.25	"	255.	188.	67.	6.6	8.8	7.	1.8	.016	.36	.208	.052	....	....	....	.044	.35	1.9	18.	19.	......	1.600
891	Nov. 1	Nov. 2	"	Cons'd	.25	"	246.	166.	80.	8.1	9.2	7.1	1.8	.056	.352	.192	.16	....	....	....	.006	.4	2.3	12.	10.	......	6.100
929	" 8	" 9	"	"	.3	"	258.	170.	88.	3.	11.	7.6	3.4	.034	.368	.192	.176	....	....	....	.002	.15	3.9	9.	12.	....	....
974	" 15	" 16	"	"	.25	"	212.	146.	66.	2.7	14.4	13.	1.4	.024	.36	.176	.184	....	....	....	.002	.25	5.4	10.	13.	......	....
1029	" 29	Dec. 1	"	Little	.6	"	208.	174.	34.	7.2	11.1	8.4	2.7	.18	.296	.208	.088	....	....	....	.008	.25	3.8	8.	12.	......	3.000
1086	Dec. 13	" 14	"	"	.4	"	180.	176.	4.	6.	12.	8.4	3.6	.0444	.312	.216	.096	....	....	....	.004	.2	3.	4.	1.	......	2.000
1122	" 20	" 23	"	"	.4	"	226.	185.	41.	6.5	8.6	8.	.6	.036	.184	.02	.164	....	....	....	.008	.5	3.	0.	0.	......	9.500

TABLE 106.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.
University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, ONE-FOURTH DISTANCE FROM MISSOURI SHORE, ALTON, ILL.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
28	May 10	May 13	Much	Much	....	None	582.	170.	412.	1.1	17.	10.	7.	.02	.62	.25	.37	....	....	....	.0014	.4	......	......	......	......	....
60	" 21	" 25	Decided	"	....	"	1418.	316.	1132.	1.4	25.2	9.9	15.3	.08	1.4	.32	1.08	....	....	....	.....	.6	17.5	21.	16.	......	6.500
85	" 31	June 1	"	"	.2	"	1484.	134.4	1349.6	1.8	31.2	9.6	21.6	.05	1.36	.304	1.056	....	....	....	.012	.75	16.5	21.	20.	......	10.750
124	June 8	" 9	"	"	.6	"	928.	148.4	779.6	1.2	19.2	8.6	10.6	.058	.92	.304	.616	....	....	....	.001	.75	16.8	24.	29.	......	25.500
142	" 15	" 15	"	"	.4	"	536.	142.8	393.2	1.6	17.8	13.1	4.7	.084	.82	.272	.548	....	....	....	.007	.9	17.	19.	20.	......	19.500
189	" 22	" 22	"	Cons'd	.6	"	456.	168.	288.	1.7	17.9	9.2	8.7	.056	.68	.208	.472	....	....	....	.04	.4	14.4	18.	21.	......	15.000
218	" 28	" 29	"	"	.5	"	476.4	150.4	326.	1.2	15.6	5.2	10.4	.078	.216	.214	.002	....	....	....	.004	.5	13.5	27.	32.	......	9.500
251	July 5	July 6	"	"	.9	"	321.6	140.	181.6	1.4	16.	6.2	9.8	.072	.464	.32	.144	....	....	....	.004	.4	15.8	26.	27.	......	9,000
287	" 12	" 13	"	Much	.5	"	625.6	164.	461.6	2.1	17.5	6.	11.5	.108	......	......	......	....	....	....	.001	.45	15.8	29.	28.	......	8,500
322	" 19	" 20	"	Little	.3	"	330.	176.	151.	2.2	13.6	5.2	8.4	.06	.488	.314	.144	....	....	....	.002	.2	12.2	28.	31.	......	9.500
359	" 26	" 27	Much	Cons'd	.5	"	308	170.	138.	2.6	8.8	5.4	3.4	.062	.392	.32	.072	....	....	....	.0	.55	9.	30.	34.	......	5,000
400	Aug. 2	Aug. 3	"	Little	.3	"	238.	182.	56.	2.6	8.5	5.1	3.4	.04	.28	.208	.072	....	....	....	.0	.0	7.2	28.	32.	......	2,500
435	" 9	" 10	"	"	.3	"	300.	184.	116.	3.	8.7	5.8	2.9	.04	.344	.296	.018	....	....	....	.0	.0	7.	26.	28.	......	3,000
470	" 16	" 17	"	Cons'd	.4	"	317.	140.	177.	2.6	9.	5.2	3.8	.06	.376	.304	.072	....	....	....	.0	.0	7.2	26.	30.	......	....
544	" 30	" 31	"	Little	.05	"	241.	191.	50.	3.4	7.2	7.2	.0	.012	.296	.192	.104	....	....	....	.0	.0	3.1	28.	28.	......	700
587	Sept. 6	Sept. 7	Decided	"	.0	"	249.	178.	71.	3.4	6.9	6.3	.6	.018	.376	.2	.176	....	....	....	.0	.05	2.9	30.	29.	......	800
623	" 13	" 14	Much	"	.1	"	293.	168	125.	3.	7.6	6.	1.6	.020	.124	.192	.332	....	....	....	.0	.15	3.6	24.	22.	......	....
657	" 20	" 21	"	"	.05	"	294.	184.	110.	1.6	9.4	7.1	2.3	.03	.18	.24	.24	....	....	....	.004	.05	4.	20.	20.	......	3.300
697	" 27	" 28	"	"	.4	"	240.	152.	88.	2.4	9.	8.	1.	.026	.368	.224	.144	....	....	....	.0	.0	3.8	18.	19.	......	2.900
739	Oct. 4	Oct. 5	"	Cons'd	.5	"	251.	148.	103.	2.2	9.4	7.5	1.9	.018	.368	.16	.208	....	....	...	.004	.05	2.8	15.	16.	......	1.650
776	" 11	" 14	"	Little	.4	"	251.	158.	96.	3.2	9.6	8.	1.6	.02	.336	.16	.176	....	....	...	0	.025	2.2	16.	17.	......	1.400
811	" 18	" 19	"	"	.25	"	250	198.	52.	5.	9.4	8.	1.4	.038	.368	.176	.192	....	....	....	.007	.0	2.1	18.	20.	......	....
849	" 25	" 26	"	"	.25	"	254.	176.	78.	3.8	7.6	7.2	.4	.018	.344	.176	.168	....	....	....	.0	.2	1.9	18.	19.	......	1,600
892	Nov. 1	Nov. 2	"	Cons'd	.25	"	234	166.	68.	5.	8.6	7.4	1.2	.044	.352	.144	.208	....	....	....	.002	.0	2.3	12.	10.	......	3.700
930	" 8	" 10	"	"	.25	"	232	152.	80.	2.2	9.6	7.4	2.2	.042	.36	.176	.184	....	....	....	.002	.1	3.9	9.	12.	......	....
975	" 15	" 16	"	"	.25	"	236.	146.	90	2.	14.4	13.2	1.2	.022	.336	.192	.144	....	....	....	.0024	.2	5.4	10.	13.	......	2.800
1030	" 29	Dec. 1	"	Little	.6	"	190.	152.	38.	3.2	11.8	8.7	3.1	.072	.312	.208	.104	....	....	..	.0	.15	3.8	8.	12.	......	2.100
1087	Dec. 13	" 14	"	"	.4	"	182.	150.	32.	3.2	11.2	8.8	2.4	.011	.304	.224	.08	....	....	....	.001	0	3.	4.	1.	......	800
1123	" 20	" 23	"	"	.4	"	198.	167.	31.	4.3	8.2	7.8	.4	.001	.152	.02	.132	....	....	....	.004	.15	3.	0.	0.	......	6.300

TABLE 107.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 FEET FROM MISSOURI SHORE, ALTON, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dis-solv'd	Nitrogen as Ammonia. Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
29	May 10	May 13	Much	Much	....	None	760.	192.	568.	5.12	18.8	9.6	9.2	.02	.61	.21	.4	....	....	....	.....	.....	......	......	......	......	....
61	" 24	" 25	Decided	"	....	"	1137.6	146.4	991.2	1.5	23.9	10.9	13.	.07	1.12	.416	.704	....	....	....	.....	.55	17.5	18.	16.	......	11,700
81	" 31	June 1	"	"	.1	"	1372.	191.2	1180.8	1.75	21.9	12.	9.9	.064	1.36	.312	1.048	....	....	....	.015	.75	16.5	21.	20.	......	17,500
125	June 8	" 9	"	"	.6	"	915.2	172.8	742.4	1.2	26.2	8.4	17.8	.052	.96	.32	.64	....	....	....	.001	.85	16.1	18.	16.	......	37,500
143	" 15	" 15	"	"	.4	"	561.6	132.8	428.8	1.8	17.6	8.4	9.2	.09	.68	.256	.424	....	....	....	.007	.9	17.	19.	20.	......	24,500
190	" 22	" 22	"	Cons'd	.6	"	480.	165.6	314.4	1.6	17.5	9.3	8.2	.07	.7	.344	.356	....	....	....	.07	.4	14.4	19.	21.	......	16,000
219	" 28	" 29	"	"	.5	"	428.	160.	268.	.65	9.	5.	4.	.084	......	......	......	....	....	....	.008	.5	13.5	27.	32.	......	5,500
252	July 5	July 6	"	"	.9	"	407.6	150.	257.6	.8	9.	9.	0.	.002	.56	.36	.2	....	....	....	.005	.5	15.3	26.	27.	......	10,500
288	" 12	" 13	"	Much	.5	"	520.8	153.6	367.2	2.55	16.2	5.6	10.6	.066	.76	.368	.392	....	....	....	.002	.55	15.8	29.	28.	......	8,000
323	" 19	" 20	"	Little	.3	"	298.	164.	134.	2.55	8.5	5.4	2.1	.064	.48	.34	.14	....	....	....	.0	.2	12.2	28.	31.	......	6,000
360	" 26	" 27	Much	Cons'd	.5	"	312.	170.	142.	2.7	9.1	5.4	3.7	.028	.461	.32	.144	....	....	....	.0	.25	9.	30.	34.	......	11,000
401	Aug. 2	Aug. 3	"	Little	.3	"	226.	176.	50.	2.	8.4	5.2	3.2	.044	.296	.216	.08	....	....	....	.0	.0	7.2	28.	32.	......	3,000
436	" 9	" 10	"	"	.3	"	302.	178.	114.	2.95	8.7	5.9	2.8	.042	.36	.288	.072	....	....	....	.0	.0	7.	26.	28.	......	1,000
471	" 16	" 17	"	Cons'd	.3	"	349.	155.	194.	3.5	8.8	6.	2.8	.052	.56	.384	.176	....	....	....	.0	.0	7.2	26.	30.	......	....
545	" 30	" 31	"	Little	.05	"	233.	171.	62.	3.4	7.	6.6	.4	.044	.28	.208	.072	....	....	....	.0	.0	3.1	28.	28.	......	650
588	Sept. 6	Sept. 7	"	"	.0	"	230.	164.	66.	3.5	6.5	6.1	.4	.018	.304	.184	.120	....	....	....	.0	.05	2.9	30.	29.	......	....
621	" 13	" 14	"	"	.1	"	242.	164.	78.	3.1	7.4	6.	1.4	.02	.384	.2	.184	....	....	....	.0	.15	3.6	24.	22.	......	....
658	" 20	" 21	"	"	.05	"	242.	164.	78.	3.	9.	7.1	1.9	.008	.384	.24	.144	....	....	....	.004	.1	4.	20.	20.	......	2,900
698	" 27	" 28	"	"	.4	"	202.	164.	38.	2.7	8.8	8.2	.6	.032	.352	.184	.168	....	....	....	.0	.0	3.8	18.	19.	......	1,500
740	Oct. 4	Oct. 5	"	Cons'd	.5	"	236.	152.	84.	2.7	9.8	8.6	1.2	.03	.368	.16	.168	....	....	....	.004	.05	2.8	15.	16.	......	2,000
777	" 11	" 14	"	Little	.4	"	237.	172.	65.	3.1	9.5	8.	1.5	.024	.312	.2	.112	....	....	....	.0	.0	2.2	16.	17.	......	....
812	" 18	" 19	"	"	.25	"	244.	188.	56.	2.8	9.1	8.2	.9	.038	.352	.152	.2	....	....	....	.007	.0	2.1	18.	20.	......	....
850	" 25	" 26	"	"	.2	"	238.	168.	70.	6.6	8.8	7.4	1.4	.03	.36	.136	.224	....	....	....	.0	.2	1.9	18.	19.	......	1,400
893	Nov. 1	Nov. 2	"	Cons'd	.25	"	224.	174.	50.	3.8	9.	7.3	1.7	.038	.352	.136	.216	....	....	....	.002	.3	2.3	12.	10.	......	900
931	" 8	" 9	"	"	.25	"	207.	146.	61.	2.3	9.2	8.	1.2	.038	.352	.184	.168	....	....	....	.002	.5	3.9	9.	12.	......	....
976	" 15	" 16	"	"	.25	"	215.	132.	83.	1.8	13.8	11.8	2.	.022	.352	.192	.16	....	....	....	.0024	.2	5.4	10.	13.	......	3,400
1031	" 29	Dec. 1	"	Little	.63	"	182.	152.	30.	3.2	14.	8.5	5.5	.052	.352	.208	.144	....	....	....	.0	.15	3.8	8.	12.	......	1,200
1088	Dec. 13	" 14	"	"	.4	"	170.	162.	8.	2.8	11.6	8.8	2.8	.038	.328	.224	.104	....	....	....	.001	.0	3.	4.	1.	......	2,200
1124	" 20	" 23	"	"	.4	"	176.	163.	13.	4.	7.8	7.6	.2	.006	.152	.02	.132	....	....	....	.002	.15	3.	0.	0.	......	2,100
....	....	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	.....	.....	.....	......	......	......	....

TABLE 108.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 YARDS FROM ILLINOIS SHORE, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
13	Apr. 28	May 1	Decided	Much	....	None	3077.	215.	2862.	4.2	14.5	8.1	6.4	.07	1.1	.28	.82	....	....	....	.....	.....	.....	.....	.....	.....	....
33	May 12	" 15	"	"	....	"	1592.	230.	1362.	4.5	17.9	7.	10.9	.004	1.	.14	.86	....	....	....	.....	.....	.....	.....	.....	.....	....
62	" 25	" 27	"	"	....	"	1072.	209.6	862.4	2.6	22.9	10.6	12.3	.04	.88	.208	.672	....	....	....	.03	.31	25.	.....	.....	......	10,650
92	June 1	June 1	"	"	.2	"	803.2	166.8	636.4	3.1	17.8	8.9	8.9	.05	.64	.256	.384	....	....	....	.034	.35	22.7	22.5	27.	......	16,750
152	" 15	" 16	"	"	.2	"	3696.	255.2	3440.8	5.1	38.	6.2	31.8	.082	1.808	.16	1.648	....	....	....	.006	.45	24.8	24.5	28.	......	113,000
191	" 22	" 23	"	"	.4	"	3178.4	256.	2922.4	4.	29.6	7.9	21.7	.07	1.2	.252	.948	....	....	....	.004	1.	20.8	26.	32.	......	23,500
224	" 29	" 30	"	"	.1	"	2418.4	198.4	2220.	2.5	18.2	5.8	12.4	.062	.92	.192	.728	....	....	....	.002	.5	20.4	24.	20.	......	16,000
293	July 13	July 14	"	"	4	"	2213.2	184.	2059.2	2.6	27.7	10.2	17.5	.086	1.5	.232	1.268	....	....	....	.001	.65	23.9	27.	35.	......	32,000
328	" 20	" 21	Much	"	Muddy	"	2150	192.	1958.	4.1	9.1	2.7	6.4	.058	1.16	.224	.936	....	....	....	.006	1.06	20.6	26.	27.	......	18,000
371	" 27	" 28	"	"	.3	"	1572.	193.	1379.	3.5	16.2	5.1	11.1	.051	.66	.216	.144	....	....	....	.001	.35	16.6	29.	36.	......	2,000
401	Aug. 3	Aug. 4	"	"	.0	"	2125.	212.	1913.	5.4	16.9	1.8	15.1	.038	.66	.16	.5	....	....	....	.0	.45	11.3	29.	37.	......	7,000
441	" 10	" 12	"	"	.5	"	844.	182.	662.	5.6	14.	6.	8.	.06	.6	.32	.28	....	....	....	.044	1.	12.9	26.	29.	......	4,100
474	" 17	" 18	"	Cons'd	.3	"	1281.	174.	1107.	5.6	18.	5.2	12.8	.056	.76	.192	.568	....	....	....	.0078	.3	13.9	27.	32.	......	....
513	" 24	" 25	"	Much	.0	"	880.	201.	679.	5.3	9.6	6.8	2.8	.108	.62	.184	.436	....	....	....	.011	.2	9.7	27.	32.	......	1,750
557	" 31	Sept. 1	"	"	.0	"	850.	191.	654.	5.9	8.3	4.8	3.5	.014	.36	.192	.168	....	....	....	.01	.2	7.5	27.	32.	......	3,000
593	Sept. 7	" 8	"	"	.0	"	606.	188.	418.	5.6	7.2	6.	1.2	.054	.3	.136	.164	....	....	....	.0034	.1	6.6	29.	38.	......	1,300
630	" 14	" 15	"	"	.2	"	344.	194.	150.	4.6	7.3	6.	1.3	.044	.392	.136	.156	....	....	....	.01	.15	6.6	22.	24.	......	1,500
664	" 21	" 22	"	Little	.2	"	320.	191.	129.	6.7	7.4	7.4	.0	.036	.44	.24	.2	....	....	....	.009	.2	6.6	19.	20.	......	3,400
703	" 28	" 29	"	Cons'd	.4	"	309.	178.	131.	5.2	9.6	7.8	1.8	.076	.36	.192	.168	....	....	....	.006	.002	5.3	16.	18.	......	1,800
741	Oct. 5	Oct. 6	"	"	.3	"	298.	204.	94.	2.5	12.	8.6	3.4	.02	.42	.176	.244	....	....	....	.006	1.1	4.5	15.	21.	......	2,600
825	" 20	" 21	"	Little	.3	"	316.	188.	128.	6.2	8.7	7.	1.7	.026	.52	.184	.336	....	....	....	.02	.2	3.3	17.	18.	......	....
857	" 26	" 27	"	Cons'd	.2	"	299.	204.	95.	7.4	7.8	6.	1.8	.032	.31	.136	.204	....	....	....	.002	.05	3.	17.	19.	......	1,500
899	Nov. 2	Nov. 3	"	Little	.3	"	308.	211.	94.	8.3	9.2	6.6	2.6	.048	.32	.152	.168	....	....	....	.0064	.5	3.9	9.	2.	......	4,000
955	" 13	" 14	"	Cons'd	.15	"	256.	192.	64.	6.2	10.6	8.2	2.4	.02	.44	.136	.304	....	....	....	.009	.3	6.2	9.	11.	......	5,200
1032	" 30	Dec. 1	"	Little	.53	"	220.	172.	54.	8.4	11.	8.1	2.9	.216	.4	.2	.2	....	....	....	.006	.5	5.5	8.	17	......	1,800
1103	Dec. 15	" 16	"	"	.3	"	240	198	42.	7.8	9.4	8.7	.7	.066	.34	.176	.164	....	....	....	.01	.2	1.6	0	5.	......	3,700

TABLE 109.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: BySuspd Matter	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
12	Apr. 28	May 1	Decided	Much	....	None	2330.	225.	2105.	4.1	17.	8.8	8.2	.08	.98	.2	.78	....	....	....	.....	.....	......	......	......	......	....
32	May 12	" 15	"	"	....	"	1928.	211.	1717.	2.9	17.2	7.8	9.4	.018	1.1	.14	.98	....	....	....	.....	.....	......	......	......	......	....
64	" 25	" 27	"	"	....	"	2221.6	173.6	2048.	2.75	31.9	8.	23.9	.05	1.44	.56	.88	....	....	....	.0075	.375	25.	......	......	......	16,100
93	June 1	June 1	"	"	.2	"	1750.4	187.2	1563.2	3.	30.7	9.	21.7	.08	.72	.2	.52	....	....	....	.012	.5	22.7	22.5	27.	......	12,400
149	" 15	" 16	"	"	.0	"	3879.2	252.	3627.2	4.1	38.2	7.2	31.	.072	1.766	.2	1.566	....	....	....	.005	.6	24.8	24.5	28.	......	68,000
192	" 22	" 23	"	"	.1	"	3296.	238.	3058.	3.8	28.6	7.	21.6	.074	1.28	.12	1.16	....	....	....	.004	1.05	20.8	26.	32.	......	26,000
225	" 29	" 30	"	"	.4	"	2520.	216.	2301.	2.75	18.6	5.	13.6	.062	1.1	.192	.908	....	....	....	.001	.3	20.4	24.	20.	......	....
294	July 13	July 14	"	"	.4	"	2606.4	188.	2418.4	3.2	28.	10.2	17.8	.082	1.54	.192	1.358	....	....	....	.004	.7	23.9	27.	35.	......	23,500
329	" 20	" 21	Much	"	.3	"	2603.	200.	2403.	4.6	8.6	3.6	5.	.062	......	......	......	....	....	....	.0	.3	20.6	26.	27.	......	18,500
372	" 27	" 28	"	"	.3	"	2281.	203.	2078.	4.1	16.4	4 5	11.9	.056	.76	.2	.56	....	....	....	.001	.45	16.6	29.	36.	......	8.500
403	Aug. 3	Aug. 4	"	"	.0	"	2445.	209.	2236.	5.1	17.	2.	15.	.064	.78	.08	.7	....	....	....	.0	.5	14.3	29.	37.	......	12,000
442	" 10	" 12	"	"	.3	"	1880.	188.	1692.	4.9	16.5	4.	12.5	.054	.72	.176	.544	....	....	....	.044	.2	12.9	26.	29.	......	4,400
475	" 17	" 18	"	"	3	"	1777.	188.	1589.	5.8	18.	4.6	13.4	.048	.76	.208	.552	....	....	....	.006	.3	13.9	27.	32.	......	....
514	" 24	" 25	"	"	.0	"	1363.	202.	1161.	5.8	17.	5.3	11.7	.07	.72	.176	.544	....	....	....	.009	.55	9.7	27.	32.	......	3.650
559	" 31	Sept. 1	"	"	.0	"	1030.	200.	830.	6.6	9.	4.	5.	.014	1.16	.088	1.072	....	....	....	.01	.4	7.5	27.	32.	......	5.200
631	Sept. 14	" 15	"	Cons'd	.2	"	760.	212.	548.	6.2	7.8	5.2	2.6	.004	.496	.136	.36	....	....	....	.006	.35	6.6	22.	24.	......	5,100
665	" 21	" 22	"	Much	.2	"	776.	222.	554.	8.1	8.4	6.6	1.8	.024	.38	.096	.284	....	....	....	.0024	.25	6.6	19.	20.	......	3.900
704	" 28	" 29	"	"	.2	"	706.	236.	470.	8.5	9.1	5.4	3.7	.074	.35	.128	.222	....	....	....	.002	.15	5.3	16.	18.	......	....
742	Oct. 5	Oct. 6	"	Cons'd	.2	"	224.	262.	462.	11.2	9.	5.7	3.3	.032	.38	.104	.276	....	....	....	.0	.35	4.5	15.	21.	......	....
826	" 20	" 21	"	"	.25	"	580.	271.	309.	12.	7.7	4.2	3.5	.026	.3	.176	.124	....	....	....	.0	.2	3.3	17.	18.	......	5,200
858	" 26	" 27	"	"	.12	"	622.	286.	336.	13.8	7.2	4.	3.2	.016	.26	.08	.18	....	....	....	.0	.0	3.	17.	19.	......	1.600
900	Nov. 2	Nov. 3	"	Little	.25	"	634.	284.	350.	13.4	6.4	4.2	2 2	.026	.32	.088	.232	....	....	....	.0024	.0	3.9	9.	2.	......	5.200
956	" 13	" 14	"	Cons'd	.15	"	357.	230.	127.	12.	8.6	8.4	.2	.02	.18	.08	.1	....	....	....	.0	.2	6.2	9.	14.	......	4.400
1033	" 30	Dec. 1	"	"	.45	"	618.	260.	358.	13.3	6.6	5.	1.6	.032	.2	.088	.112	....	....	....	.0	.15	5.5	8.	17.	......	7.300
1104	Dec. 15	" 16	"	Much	.15	"	618.	276.	342.	14.	6.8	5.6	1.2	.066	.18	.12	.06	....	....	....	.002	.1	4.6	0.	5.	......	4,500

TABLE 110.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, AT CHAIN OF ROCKS, INLET TOWER, ST. LOUIS WATER WORKS.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
11	Apr. 28	May 1	Decided	Much	....	None	3470.	210.	3260.	6.8	25.	8.5	16.5	.1	1.1	.2	.9	....	....	....	......	......	......	......	......	......	....
31	May 12	" 15	"	"	....	"	3030.	240.	2790.	4.6	20.	5.8	14.2	.01	1.1	.15	.95	....	....	....	......	......	......	......	......	......	....
63	" 25	" 27	"	"	....	"	3112.	201.8	2907.2	3.3	31.3	10.	21.3	.04	1.44	.264	1.176	....	....	....	.0075	.45	25.	......	......	......	11,400
94	June 1	June 1	"	"	.2	"	3088.	221.6	2866.4	3.7	32.9	14.6	18.3	.08	1.2	.192	1.008	....	....	....	.002	.45	22.7	22.5	27.	......	14.300
150	" 15	" 16	"	"	.2	"	4356.	256.	1100.	3.9	38.5	7.2	31.3	.056	1.88	.248	1.632	....	....	....	.004	1.	24.8	24.5	28.	......	69.000
193	" 22	" 23	"	"	.4	"	3456.	216.4	3009.6	3.5	28.1	7.1	21.	.078	1.48	.256	1.224	....	....	....	.006	1.	20.8	26.	32.	......	24.000
226	" 29	" 30	"	"	1	"	2728.8	232.	2496 8	2.65	18.4	5.2	13.2	.07	1.2	.176	.824	....	....	....	.0	.5	20.4	24.	20.	......	27.000
295	July 13	July 14	"	"	.4	"	3285.6	200.	3085.6	3.2	28.8	5.5	23.3	.102	2.	.208	1.792	....	....	....	.002	.6	23.9	27.	35.	......	29,000
330	" 20	" 21	Much	"	.3	"	2821.	200.	2624.	4.5	9.2	3.4	5.8	.07	1.02	.200	.82	....	....	....	.0	.35	20.6	26.	27.	......	12.000
373	" 27	" 28	"	"	.3	"	2576.	195.	2381.	4.6	17.6	4.2	13.4	.096	.8	.192	.608	....	....	....	.0014	.45	16.6	29.	36.	......	8.500
404	Aug. 3	Aug. 4	"	"	0	"	2760.	211.	2516.	5 2	16.2	1.8	12.4	.056	.8	.08	.72	....	....	....	.0	.45	14.3	29.	37.	......	13.000
443	" 10	" 12	"	"	2	"	2278.	198.	2080.	4.7	16.7	3.1	13.3	.058	.82	.136	.684	....	....	....	.0	.2	12.9	26.	29.	......	5.150
476	" 17	" 18	"	"	.3	"	2069	192.	1877.	6.8	18.6	5.	13.6	.06	.96	.216	.744	....	....	....	.002	.4	13.9	27.	32.	......	....
515	" 21	" 25	"	"	.0	"	1734.	198.	1536.	7.1	19.1	5.2	13.9	.072	1.	.16	.84	....	....	....	.0035	.45	9.7	27.	32.	......	6,550
560	" 31	Sept. 2	"	"	.0	"	1178.	201.	974.	7.1	9 2	5.	4.2	.038	.44	.12	.32	....	....	....	.01	.2	7.5	27.	32.	......	4.450
591	Sept. 7	" 8	"	"	.05	"	1094.	205.	889.	7.8	8.2	5.2	3.	.04	.66	.08	.58	....	....	....	.0	.15	6.6	29.	38.	......	3,000
632	" 14	" 15	"	"	.1	"	1110.	246.	864.	8.8	7.8	1.6	3.2	.004	.292	.101	.088	....	....	....	.006	.2	6.6	22.	24.	......	11.000
666	" 21	" 22	"	"	.1	"	894.	230	661.	9.7	8.	4.3	3.7	.002	.4	.064	.336	....	....	....	.0024	.3	6.6	19.	20.	......	1,500
705	" 28	" 29	"	"	.2	"	825.	251.	571.	10.7	7.1	5 3	2.1	.062	.36	.104	.256	....	....	....	.006	.15	5.3	16.	18.	......	8,900
743	Oct. 5	Oct. 6	"	"	.2	"	798.	255.	543.	10.8	8.2	5.3	2.9	.01	.34	.088	.252	....	....	....	.0	.25	4.5	15.	21.	......	8,900
827	" 20	" 21	"	Cons'd	.2	"	662.	278.	386.	12.2	7.6	1.	3.6	.014	.42	.176	.214	....	....	....	.0	.2	3.3	17.	18.	......	7,800
859	" 26	" 27	"	"	12	"	682.	296.	386.	13.9	6 8	3 6	3.2	.02	.26	.088	.172	....	....	....	.0	.0	3.	17.	19.	......	3,800
901	Nov. 2	Nov. 3	"	Little	.2	"	669.	284.	385.	12.1	6.6	1 1	2 5	.05	.32	.096	.224	....	....	....	.002	.25	3.9	9.	2.	......	5,100
957	" 13	" 14	"	Cons'd	.15	"	420.	261.	156.	15.6	6.8	5.8	1.	.018	.2	.088	.112	....	....	....	.0	.2	6.2	9.	14.	......	1 800
1031	" 30	Dec. 1	"	"	.45	"	616.	288.	328.	13.9	6.8	1.	2.8	.021	.24	101	.136	....	....	....	.0	.15	5.5	8.	17.	......	9,400
1105	Dec 15	" 16	"	Much	.1	"	676.	294.	382.	15.6	7.1	3.6	3 8	.106	.41	.018	.392	....	....	....	.002	.15	4.6	0.	5.	......	8.500
....	....	....	....	....	......	....	.....	......	......	......	....	....	....	......	......	......	......	....	....	....	......	......	......	......	......	......	....

TABLE 111.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 FEET FROM MISSOURI SHORE, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
10	Apr. 28	May 1	Decided	Much	....	None	3560.	235.	3325.	6.2	21.2	5.4	15.8	.06	1.2	.16	1.04	....	....	....	......	......	......	......	......	......	....
30	May 12	" 15	"	"	....	"	3614.	274.	3340.	4.6	16.2	4.	12.2	.01	1.4	.14	1.26	....	....	....	......	......	......	......	......	......	....
65	" 25	" 27	"	"	....	"	3900.	210.	3660.	3.95	26.5	8.5	18.	.06	1.8	.44	1.36	....	....	...	.004	.375	25.	......	......	......	20,700
95	June 1	June 1	"	"	.2	"	2322.8	233.6	2089.2	4.2	33.9	16.7	17.2	.068	1.6	.112	1.488	....	....	....	.006	.3	22.7	22.5	27.	......	11,400
151	" 15	" 16	"	"	.2	"	4376.8	279.2	4097.6	4.3	38.5	6.	32.5	.064	1.64	.176	1.464	....	....	....	.006	1.	24.8	24.5	28.	......	57,500
194	" 22	" 23	"	"	.4	"	3744.	256.8	3487.2	3.5	29.9	6.4	23.5	.066	1.4	.152	1.248	....	....	....	.0062	1.	20.8	26.	32.	......	10,500
227	" 29	" 30	"	"	.4	"	2700.	228.8	2472.2	2.85	18.5	5.1	13.4	.086	1.3	.16	1.14	....	....	....	.001	.5	20.4	24.	20.	......	11,500
296	July 13	July 14	"	"	.5	"	3463.3	205.6	3257.7	4.3	18.8	3.4	15.4	.076	1.94	.216	1.724	....	....	....	.004	.6	23.9	27.	35.	......	33,000
331	" 20	" 21	Much	"	.3	"	3018.	200.8	1817.2	4.6	8.9	3.1	5.8	.076	1.22	.16	1.06	....	....	....	.001	.55	20.6	26.	27.	......	14,000
374	" 27	" 28	"	"	.3	"	2725.	192.	2533.	4.7	17.6	3.8	13.8	.078	.82	.208	.612	....	....	....	.0	.45	16.6	29.	36.	......	10,500
405	Aug. 3	Aug. 4	"	"	.0	"	2952.	211.	2741.	5.	18.3	1.4	16.9	.044	1.14	.08	1.06	....	....	....	.0	.15	14.3	29.	37.	......	16,000
444	" 10	" 12	"	"	.2	"	2624.	268.	2356.	5.1	17.5	4.6	12.9	.066	.9	.136	.764	....	....	....	.0	.15	12.9	26.	29.	......	2,700
477	" 17	" 18	"	"	.2	"	2236.	201.	2035.	7.2	18.3	3.2	15.2	.058	1.04	.152	.888	....	....	....	.0024	.55	13.9	27.	32.	......	....
516	" 24	" 25	"	"	.0	"	1668.	210.	1458.	6.7	19.	4.6	14.4	.082	1.	.12	.88	....	....	....	.012	.7	9.7	27.	32.	......	5,150
561	" 31	Sept. 2	"	"	.0	"	1266.	215.	1051.	7.2	8.4	4.	4.4	.027	.68	.12	.56	....	....	....	.01	.2	7.5	27.	32.	......	8,400
633	Sept. 11	" 15	"	"	.1	"	1160.	255.	905.	10.1	8.9	4.3	4.6	.038	.52	.136	.384	....	....	....	.002	.25	6.6	22.	24.	......	7,300
667	" 21	" 22	"	"	.0	"	992.	262.	730.	11.7	7.6	3.4	4.2	.036	.38	.072	.308	....	....	....	.0	.3	6.6	19.	20.	......	5,900
706	" 28	" 29	"	"	.15	"	846.	276.	570.	10.9	8.	4.2	3.8	.036	.36	.104	.256	....	....	....	.002	.25	5.3	16.	18.	......	7,100
744	Oct. 5	Oct. 6	"	"	.15	"	788.	272.	516.	13.5	8.	4.4	3.6	.03	.32	.088	.232	....	....	....	.0	.25	4.5	15.	21.	......	4,300
828	" 20	" 21	"	Cons'd	.2	"	668.	290.	378.	16.7	7.	3.	4.	.024	.24	.184	.056	....	....	....	.0	.25	3.3	17.	18.	......	6,000
860	" 26	" 27	"	"	.12	"	700.	304.	396.	14.4	6.6	3.1	3.5	.01	.272	.096	.176	....	....	....	.0	.0	3.	17.	19.	......	2,800
902	Nov. 2	Nov. 3	"	Little	.2	"	706.	278.	528.	12.5	7.4	4.2	3.2	.018	.34	.096	.244	....	....	....	.004	.25	3.9	9.	2.	......	4,400
958	" 13	" 14	"	Cons'd	.12	"	480.	318.	162.	21.2	5.4	4.2	1.2	.012	.14	.061	.076	....	....	....	.002	.2	6.2	9.	14.	......	3,200
1035	" 30	Dec. 1	"	"	.35	"	742.	318.	424.	15.7	6.8	2.6	4.2	.03	3.2	.72	.248	....	....	....	.0	.15	5.5	8.	17.	......	7,200
1106	Dec. 15	" 16	"	Much	.1	"	796.	314.	482.	17.9	5.6	2.2	3.4	.07	6.4	.4	.6	....	....	....	.002	.15	4.6	0.	5.	......	13,500

TABLE 112

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER — MISSOURI RIVER, FORT BELLEFONTAINE, WEST ALTON, MO.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
376	July 27	July 28	Much	Much	.3	None	3520.	240.	3280.	5.5	19.2	1.3	17.9	.058	......	......	......	....	....	....	.0	.35	13.3	29.	......	......	8,000
490	Aug. 17	Aug. 19	"	"	Muddy	"	2564.	198.	2366.	9.8	27.2	3 4	23.8	.058	1.088	.128	.96	....	....	....	.0	.45	11.2	28.	35.	......	....
562	" 31	Sept. 2	"	"	.0	"	1678.	231.	1444.	7.6	9.6	2.9	6.7	.016	1.42	.096	1.324	....	....	....	.006	.2	8.3	28.	29.	......	4,000
596	Sept. 7	" 8	"	"	.05	"	1203.	226.	977.	8.9	12.4	3.4	9.	.002	.384	.028	.36	....	....	....	.0	.15	7.3	29.	34.	......	3,750
635	" 14	" 15	"	"	.05	"	1270.	276.	994.	10.6	8.6	3.2	5.4	.028	.536	.096	.44	....	....	....	.002	.2	6.7	22.	27.	......	12,800
671	" 21	" 22	Decided	"	.1	"	1138.	275.	863.	12.4	9.2	3.8	5.4	.008	.432	.136	.296	....	....	....	.002	.85	6.1	20.	22.	......	5,600
714	" 28	" 29	"	"	.15	"	998.	298.	700.	13 6	8.2	3.8	5.4	.022	.344	.072	.272	....	....	....	.0	.45	5.5	18.	17.	......	1,600
749	Oct. 5	Oct. 6	"	Cons'd	.5	"	668.	304.	364.	15.3	7.	4.	3.	.038	.228	.072	.216	....	....	....	.0	.3	5.	17.	24.	......	7,500
789	" 12	" 15	"	Much	.15	"	877.	314.	563.	15.6	7.3	3.3	4.	.02	.256	.032	.224	....	....	....	.0	.4	4.8	22.	25.	......	2,100
824	" 19	" 20	Much	"	.05	"	800.	307.	493.	13.9	7.3	2.6	4.7	.018	.288	.176	.112	....	....	....	.0	.2	4.6	18.	19.	......	20,900
869	" 26	" 27	"	"	.05	"	758.	317	441.	17.4	5.	2.6	2.4	.036	.264	.104	.16	....	....	....	.02	.3	4.5	19.	23.	......	4,000
911	Nov 2	Nov. 4	"	"	12	"	771.	310.	461.	16.	4.8	2 8	2.	.028	.32	.136	.184	....	....	....	.002	.025	4.7	11.	0.	......	10,600
938	" 9	" 10	"	Cons'd	.12	"	792	304.	388.	22.8	8.	3.4	4.6	.036	.216	.056	.16	....	....	....	.0	.4	4.5	12.	23.	......	....
976	" 16	" 17	"	Much	.02	"	669.	340.	329.	27.	6.	3.8	2.2	.036	.176	.032	.144	....	....	....	.002	.2	4.4	12.	19.	......	8,000
1007	" 23	" 24	"	"	.11	"	924	296	628.	15.4	9.	2.	7.	.042	.296	.088	.208	....	....	....	.002	.5	4.9	11.	10.	......	....
1027	" 30	Dec. 1	"	Cons'd	32	"	788.	321.	464.	16.8	4 1	1 8	2.3	.032	.248	.072	.176	....	....	....	.0	.2	5.	10.	17.	......	6,900
1067	Dec. 7	" 8	"	Much	.0	"	816.	328.	488.	17.4	4.	1.8	2 2	.054	.296	.072	.224	....	....	....	.0	.2	5.5	5.	12.	......	7,700
1101	" 11	" 16	"	"	0	"	938.	330.	608	18.4	5 6	2.2	3.4	.056	.304	.056	.248	....	....	....	.002	.05	4.7	0.	—5.	......	6,600
1139	" 21	" 23	"	"	1	"	800.	316.	484	18.8	6.	2.6	3.4	.012	.264	.104	.16	....	....	....	.004	.1	4.9	2.	9.	......	7,700
1159	" 28	" 30	"	"	Muddy	"	606	358.	248.	24.4	4 2	2.6	1 6	1.	.136	.032	.104	....	....	....	.005	.05	3.2	1.	- 2.	......	18,200
....	......	......	......	......	......	......	..	..		....	....	....	....	....	......	......	......	....	....	....	....	....	....	......	......	......	......

TABLE 113.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN,
University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 YARDS FROM ILLINOIS SHORE, JEFFERSON BARRACKS, MO.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
14	May 1	May 3	Much	Much	....	None	2155.	209.	1946.	3.2	17.5	5.9	11.6	.08	1.1	.2	.8	....	....	....	.008	.0	......	......	......	......	....
38	" 16	" 17	Decided	"	....	"	1765.	181.	1581.	3.1	18.9	8.3	10.6	.004	1.2	.2	1.	....	....	....	......	......	......	......	......	......	....
110	June 6	June 7	"	"	.4	"	2708.	218.	2490.	3.7	2.8	6.7	21.3	.063	1.98	.2	1.78	....	....	....	.005	1.25	23.5	26.	......	......	24,100
154	" 16	" 17	Much	"	.2	"	3410.	259.2	3150.8	4.2	36.9	6.	30.9	.11	1.8	.248	1.55	....	....	....	.0126	.5	22.8	26.	......	......	69,000
196	" 23	" 24	"	"	.6	"	2880.	266.8	2613.2	3.5	27.5	9.1	18.4	.076	1.32	.2	1.12	....	....	....	.01	.75	22.	28.	......	......	53,000
229	" 29	" 30	"	"	.4	"	1850.4	202.	1618.4	2.85	17.6	5.2	12.4	.066	.72	.184	.536	....	....	....	.0	.65	20.5	26.	20.	......	1,000
260	July 6	July 7	Decided	"	.4	"	1988.	209.6	1778.4	2.8	18.6	5.4	13.2	.069	.96	.216	.744	....	....	....	.006	.4	22.9	26.	......	......	14,000
299	" 14	" 15	"	"	.5	"	2714.8	201.6	2513.2	3.7	16.8	5.2	11.6	.084	1.26	.232	1.038	....	....	....	.0	.45	23.6	28.	......	......	21,500
334	" 21	" 22	Much	"	.3	"	1996.	192.8	1803.2	5.7	17.8	5.2	12.6	.048	.96	.168	.792	....	....	....	.003	.5	19.8	28.	......	......	9,000
366	" 27	" 28	"	"	.3	"	1750.	207.	1543.	4.8	16.7	4.2	12.5	.048	.7	.176	.524	....	....	....	.0	.75	16.2	30.	......	......	13,000
407	Aug. 3	Aug. 4	"	"	.0	"	2046.	217.	1829.	6.	16.4	2.8	13.6	.048	.72	.144	.576	....	....	....	.0	.55	14.3	32.	......	......	15,500
447	" 11	" 12	"	"	.3	"	1193.	180.	1013.	4.7	16.8	5.2	11.6	.028	......	......	......	....	....	....	.026	.36	14.4	29.	......	......	9,700
482	" 17	" 18	"	"	.2	"	1151.	180.	971.	6.	16.8	4.8	12.	.046	......	......	......	....	....	....	.006	.4	13.9	29.	......	......	....
518	" 25	" 26	"	"	.0	"	860.	196.	664.	6.1	16.9	6.	10.9	.06	.56	.272	.288	....	....	....	.006	.45	8.4	30.	......	......	6,750
551	" 31	Sept. 1	"	"	Muddy	"	932.	207.	735.	6.9	9.4	4.8	4.6	.001	.44	.104	.336	....	....	....	.006	.025	7.5	30.	......	......	3,200
598	Sept. 8	" 9	"	"	.05	"	554.	192.	362.	6.	7.6	5.6	2.	.012	.352	.104	.248	....	....	....	.002	.05	6.3	30.	......	......	....
673	" 22	" 23	"	Cons'd	.1	"	286.	177.	109.	6.7	9.3	7.2	2.1	.024	.496	.248	.248	....	....	....	.005	.2	6.7	19.	......	......	37,800
708	" 28	" 29	"	"	.4	"	322.	193.	129.	6.	8.8	7.5	1.3	.044	.392	.184	.208	....	....	....	.002	.0	5.3	17.	......	......	16,100
751	Oct. 6	Oct. 7	"	Little	.3	"	277.	190.	87.	5.5	9.4	8.7	.7	.032	.4	.168	.232	....	....	....	.001	.25	4.1	16.	......	......	....
782	" 12	" 15	"	"	.35	"	302.	208.	94.	6.4	9.	7.3	1.7	.018	.376	.152	.224	....	....	....	.0	.025	3.5	20.	......	......	20,600
819	" 19	" 20	"	"	.25	"	322.	182.	150.	8.2	9.3	7.	2.3	.02	.4	.144	.256	....	....	....	.0	.0	3.2	19.	......	......	31,100
905	Nov. 3	Nov. 4	"	Cons'd	.2	"	320.	196.	124.	6.7	8.2	7.	1.2	.062	.400	.112	.288	....	....	....	.006	.4	4.	9.	......	......	2,600
945	" 11	" 13	"	Little	.25	"	296.	170.	126.	6.6	9.2	7.8	1.4	.036	.336	.176	.16	....	....	....	.008	.2	5.4	9.	......	......	....
1001	" 23	" 24	"	"	.5	"	257.	184.	73.	7.8	14.	8.7	5.3	.054	.432	.248	.184	....	....	....	.02	.025	6.6	12.	......	......	3,600
1062	Dec. 7	Dec. 8	"	"	.4	"	230.	214.	16.	8.2	9.1	8.3	.8	.094	.44	.2	.24	....	....	....	.008	.3	4.8	3.	......	......	1,000
1092	" 14	" 15	"	"	.3	"	284.	202.	82.	6.8	9.	8.4	.6	.042	.296	.216	.08	....	....	....	.01	.35	4.6	2.	......	......	2,000
1133	" 21	" 23	"	"	.35	"	296.	217.	79.	9.	9.4	7.6	1.8	.012	.232	.024	.208	....	....	....	.008	.4	5.3	0.	......	......	11,900

TABLE 114.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.

SOURCE OF WATER—MISSISSIPPI RIVER, EAST OF MIDSTREAM, JEFFERSON BARRACKS, MO.

University of Chicago.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
111	June 6	June 7	Decided	Much	.1	None	2845.6	225.6	2620.	4.	29.	6.4	22.6	.066	1.76	.192	1.568	....	....	....	.005	1.	23.5	26.	.....	......	22,650
155	" 16	" 17	Much	"	.2	"	3622.4	255.2	3367.2	4.	38.1	5.8	32.3	.054	1.8	.176	1.624	....	....	....	.02	.95	22.8	26.	.....	......	25,000
197	" 23	" 24	"	"	.4	"	3239.2	364.	3975.2	3.4	28.5	9.4	19.1	.078	1.4	.192	1.208	....	....	....	.006	.7	22.	28.	.....	......	26,500
230	" 29	" 30	Decided	"	.4	"	2138.4	216.8	1921.6	2.9	19.	5.4	13.6	.036	1.08	.208	.872	....	....	....	.0	.1	20.5	26.	20.	......	18,500
261	July 6	July 7	"	"	.4	"	2518.4	208.8	2309.6	2.9	18.5	4.6	13.9	.05	......	......	......	....	....	....	.008	1.	22.9	26.	.....	......	12,000
300	" 14	" 15	"	"	.5	"	2613.6	181.6	2432.	3.7	27.2	5.2	22.	.08	1.44	.208	1.232	....	....	....	.0	.5	23.6	28.	.....	......	34,000
335	" 21	" 22	Much	"	.3	"	2208.	192.	2016.	5.	17.9	4.8	13.1	.06	.84	.176	.664	....	....	....	.0	.75	19.8	28.	.....	......	17,000
367	" 27	" 28	"	"	.3	"	1819.	205.	1614.	5.1	16.7	4.2	12.5	.072	.8	.168	.632	....	....	....	.0	.45	16.2	30.	.....	......	....
408	Aug. 3	Aug. 4	"	"	.0	"	2436.	232.	2204.	5.3	17.2	2.3	14.9	.05	.76	.168	.592	....	....	....	.0	.45	14.3	32.	.....	......	7,500
448	" 11	" 12	"	"	.3	"	1380.	152.	1228.	4.7	16.2	5.	11.2	.044	1.06	.24	.82	....	....	....	.022	.36	14.4	29.	.....	......	12,100
483	" 17	" 18	"	"	.3	"	1322.	174.	1118.	5.6	17.	4.6	12.4	.058	.76	.251	.504	....	....	....	.006	.3	13.9	29.	.....	......	....
519	" 25	" 26	"	"	.0	"	1049.	194.	855.	6.1	17.2	5.4	11.8	.1	.72	.16	.56	....	....	....	.0	.5	8.4	30.	.....	......	6,800
552	" 31	Sept. 1	"	"	.0	"	1015.	204.	811.	6.2	9.4	4.8	4.6	.02	.44	.16	.28	....	....	....	.0024	.3	7.5	30.	.....	......	2,200
599	Sept. 8	" 9	"	"	.05	"	630.	206.	424.	6.	7.6	4.8	2.8	.014	.408	.12	.288	....	....	....	.002	.05	6.3	30.	.....	......	42,000
674	" 22	" 23	"	Cons'd	.1	"	480.	191.	286.	6.6	9.2	7.2	2.	.022	.44	.2	.24	....	....	....	.002	.2	6.7	19.	.....	......	8,400
709	" 28	" 29	"	"	.4	"	390.	200.	190.	6.3	9.7	7.4	2.3	.032	.4	.184	.216	....	....	....	.002	.15	5.3	17.	.....	......	10,600
752	Oct. 6	Oct. 7	"	Little	.3	"	342.	181.	161.	5.6	9.	8.2	.8	.03	.42	.16	.26	....	....	....	.002	.25	4.1	16.	.....	......	....
783	" 12	" 15	"	Cons'd	.3	"	366.	208.	58.	6.4	9.1	7.8	1.3	.018	.38	.168	.212	....	....	....	.0	.35	3.5	20.	.....	......	14,000
820	" 19	" 20	"	Little	.25	"	382.	194.	198.	8.	7.6	6.7	.9	.026	.32	.128	.192	....	....	....	.0	.0	3.2	19.	.....	......	6,000
863	" 26	" 27	"	Cons'd	.15	"	366.	200.	166.	8.2	9.2	7.1	2.1	.024	.32	.128	.192	....	....	....	.002	.0	2.8	19.	.....	......	6,600
906	Nov. 3	Nov. 4	"	"	.2	"	350.	182.	168.	7.4	9.2	7.	2.2	.044	.32	.136	.181	....	....	....	.005	.025	4.	9.	.....	......	2,800
916	" 11	" 13	"	Little	.25	"	324.	170.	154.	5.6	8.2	8.	.2	.026	.44	.168	.272	....	....	....	.008	.35	5.4	9.	.....	......	....
1002	" 23	" 24	"	"	.5	"	306.	180.	126.	7.6	12.8	8.7	4.1	.02	.31	.21	1	....	....	....	.026	.05	6.6	12.	.....	......	4,500
1063	Dec. 7	Dec. 8	"	"	.4	"	268.	202.	66.	8.	9.1	8.3	.8	.094	.44	.256	.181	....	....	....	.002	.3	4.8	3.	.....	......	1,700
1093	" 14	" 15	"	"	.3	"	282.	206.	76.	7.6	8.9	8.	.9	.044	.376	.176	.2	....	....	....	.019	.3	4.6	2.	.....	......	1,700
1134	" 21	" 23	"	Cons'd	.4	"	406	201.	202.	9.5	8.8	7.1	1.1	.001	.56	.16	.1	....	....	....	.012	.35	5.3	0.	.....	......	6,000

TABLE 115.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, JEFFERSON BARRACKS, MO.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
	1899 Collection.	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved	By Suspd Matter.	Free Ammonia.	Albuminoid Am Tot'l	Albuminoid Am Dis-solv'd	Albuminoid Am Sus-pnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
15	May 1	May 3	Much	Much	....	None	2290.	230.	2060.	4.2	19.	6.5	12.5	.08	1.2	.16	1.04	....	....	....	.008	.0	......	......	......	......	....
112	June 6	June 7	Decided	"	.5	"	3203.2	230.4	2972.8	4.	28.3	7.1	21.2	.05	1.4	.192	1.208	....	....	....	.005	.7	23.5	26.	......	......	15,400
156	" 16	" 17	Much	"	.2	"	3500.	256.8	3243.2	4.6	38.6	6.1	32.5	.074	1.76	.176	1.584	....	....	....	.0106	.45	22.8	26.	......	......	17.500
198	" 23	" 24	"	"	.4	"	3296.8	260.	3036.8	2.5	29.	9.3	19.7	.088	1.36	.184	1.176	....	....	....	.0066	.6	22.	28.	......	......	56,500
231	" 29	" 30	Decided	"	.4	"	2516.4	229.6	2286.8	3.	19.	4.1	14.9	.052	1.08	.2	.88	....	....	....	.0	.3	20.5	26.	20.	......	43,000
262	July 6	July 7	"	"	.4	"	2521.2	201.6	2319.6	2.75	18.6	4.5	14.1	.04	1.04	.184	.856	....	....	....	.002	.95	22.9	26.	......	......	14,500
301	" 14	" 15	"	"	.5	"	2536.	189.6	2316.4	3.9	28.7	5.	23.7	.06	1.52	.4	1.12	....	....	....	.0	.75	23.6	28.	......	......	21,000
336	" 21	" 22	Much	"	.3	"	2565.	186.	2379.	5.1	18.4	4.	14.4	.078	.8	.16	.64	....	....	....	.002	.8	19.8	28.	......	......	17,000
368	" 27	" 28	"	"	.3	"	2022.	194.	1828.	5.2	17.6	4.2	13.4	.048	.8	.168	.632	....	....	....	.0	.35	16.2	30.	......	......	8,000
409	Aug. 3	Aug. 4	"	"	.0	"	2607.	208.	2499.	5.6	17.8	2.1	15.7	.054	.72	.144	.576	....	....	....	.0	.45	14.3	32.	......	......	14,500
449	" 11	" 12	"	"	.1	"	2237.	186.	2051.	5.	17.5	4.2	13.3	.036	......	......	......	....	....	....	.0	.24	14.4	29.	......	......	4,400
484	" 17	" 18	"	"	.3	"	1626.	190.	1436.	7.	17.3	3.7	13.5	.048	.72	.272	.448	....	....	....	.0	.3	13.9	29.	......	......	....
520	" 25	" 26	"	"	.05	"	1265.	187.	1078.	6.1	17.7	5.1	12.6	.082	.8	.144	.656	....	....	....	.004	.6	8.4	30.	......	......	3,550
553	" 31	Sept. 1	"	"	.0	"	1098.	272.	826.	6.4	9.2	5.2	4.	.02	.44	.136	.304	....	....	....	.0024	.4	7.5	30.	......	......	5,100
600	Sept. 8	" 9	"	"	.05	"	812.	199.	613.	7.	8.4	4.6	3.8	.02	.384	.088	.296	....	....	....	.001	.1	6.3	30.	......	......	10,100
675	" 22	" 23	"	Cons'd	.1	"	664.	202.	462.	8.	7.7	6.	1.7	.062	.44	.136	.304	....	....	....	.0	.2	6 7	19.	......	......	20,400
710	" 28	" 29	"	Much	.3	"	529.	214.	315.	7.2	9.4	6.5	2.9	.036	.4	.16	.24	....	....	....	.002	.05	5.3	17.	......	......	4.900
753	Oct. 6	Oct. 7	"	Cons'd	.2	"	690.	226.	464.	8.8	9.3	6.8	2.5	.034	.2	.136	.064	....	....	....	.003	.2	4.1	16.	......	......	....
784	" 12	" 15	"	"	.2	"	499.	231.	268.	8.	8.6	6.4	2.2	.03	.34	.128	.212	....	....	....	.0	.35	3.5	20.	......	......	5,200
821	" 19	" 20	"	"	.25	"	562.	212.	350.	10.2	7.2	5.7	1.5	.022	.38	.112	.268	....	....	....	.002	.05	3.2	19.	......	......	14,100
861	" 26	" 27	"	"	.15	"	514.	238.	276.	9.8	8.	6.	2.	.016	.3	.136	.164	....	....	....	.002	.1	2.8	19.	......	......	5.800
907	Nov. 3	Nov. 4	"	"	.2	"	438.	204.	234.	8.3	7.8	6.2	1.6	.024	.32	.104	.216	....	....	....	.003	.025	4.	9.	......	......	5,900
947	" 11	" 13	"	Little	.2	"	334.	202.	132.	6.4	9.8	8.3	1.5	..04	.3	.184	.116	....	....	....	.006	.35	5.4	9.	......	......	....
1003	" 23	" 24	"	Cons'd	.35	"	386.	188.	198.	6.8	9.4	9.	.4	.06	.4	.200	.2	....	....	....	.02	.05	6.6	12.	......	......	4.000
1064	Dec. 7	Dec. 8	"	"	.4	"	304.	196.	108.	8.	8.7	8.3	.4	.09	.44	.176	.264	....	....	....	.008	.15	4.8	3.	......	......	3,100
1094	" 14	" 15	"	"	.2	"	398.	224.	194.	8.2	8.6	7.2	1.4	.088	.46	.144	.316	....	....	....	.0076	.1	4.6	2.	......	......	2,700
1135	" 21	" 23	"	Little	.4	"	530.	260.	270.	11.6	8.2	5.6	2.6	.008	.54	.104	.436	....	....	....	.008	.35	5.4	0.	......	......	9,800

TABLE 116.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN,
University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, WEST OF MIDSTREAM, JEFFERSON BARRACKS, MO.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am: Tot'l	Albuminoid Am: Dissolv'd	Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
113	June 6	June 7	Decided	Much	.5	None	3532.8	259.6	3273.2	4.15	38.1	6.2	31.9	.06	1.92	.2	1.72	....	....	....	.01	1.1	23.5	26.	......	......	26,250
157	" 16	" 17	Much	"	.2	"	3288.	258.4	3029.6	3.5	37.8	6.4	31.4	.062	.19	.476	.724	....	....	....	.026	.95	22.8	26.	......	......	18,000
199	" 23	" 21	"	"	.4	"	3181.2	252.	3229.2	3.6	28.6	9.	19.6	.078	1.2	.136	1.064	....	....	....	.004	.6	22.	28.	......	......	12,000
232	" 29	" 30	Decided	"	.4	"	2452.	231.2	2220.8	2.9	18.6	5.	13.6	.086	1.2	.2	1.	....	....	....	.0	.75	20.5	26.	20.	......	40,000
263	July 6	July 7	"	"	.4	"	2776.8	212.	2564.8	2.6	19.3	4.6	14.7	.042	......	......	......	....	....	....	.003	1.	22.9	26.	......	......	21,500
302	" 14	" 15	"	"	.5	"	2715.6	186.4	2519.2	4.3	28.	5.5	22.5	.066	1.68	.224	1.456	....	....	....	.0	.8	23.6	28.	......	......	31,000
337	" 21	" 22	Much	"	.3	"	2831.	192.8	2641.2	5.6	18.3	2.8	15.5	.044	.8	.144	.656	....	....	....	.0024	.9	19.8	28.	......	......	27,000
369	" 27	" 28	"	"	.3	"	2670.	200.	2470.	4.6	18.	4.8	13.2	.07	.92	.184	.736	....	....	....	.0	.3	16.2	30.	30.	......	9,500
410	Aug. 3	Aug. 4	"	"	.0	"	3058.	214.	2844.	5.3	18.2	1.8	16.4	.056	.8	.152	.648	....	....	....	.0	.45	14.3	32.	......	......	34,000
470	" 11	" 12	"	"	.1	"	2536.	200.	2336.	5.9	17.8	3.6	14.2	.028	......	......	......	....	....	....	.0	.9	14.4	29.	......	......	13,000
485	" 17	" 18	"	"	.3	"	3001.	198.	1803.	7.6	17.7	3.9	13.8	.056	.72	.264	.456	....	....	....	.0025	.5	13.9	29.	......	......	....
521	" 25	" 26	"	"	.0	"	1486.	201	1285.	6.6	19.2	4.5	14.7	.06	.84	.144	.696	....	....	....	.0	.7	8.4	30.	......	......	9,650
554	" 31	Sept. 1	"	"	Muddy	"	1146.	212.	934.	6.6	8.4	5.	3.4	.01	.36	.112	.218	....	....	....	.0001	.2	7.5	30.	......	......	22,900
601	Sept. 8	" 9	"	"	"	"	900.	201.	690.	7.4	8.8	4.3	4.5	.053	.4	.092	.308	....	....	....	.001	.1	6.3	30.	......	......	37,800
676	" 22	" 23	"	Cons'd	.1	"	828.	236.	592	9.6	6.	4.6	1.4	.028	.44	.136	.304	....	....	....	.0	.55	6.7	19.	......	......	91,600
711	" 28	" 29	Decided	Much	.2	"	684.	216.	438.	9.2	9.1	5.7	3.4	.024	.32	.12	.2	....	....	....	.002	.25	5.3	17.	......	......	9,700
754	Oct. 6	Oct. 7	Much	Cons'd	.2	"	728.	260.	468.	11.2	8.6	5.	3.6	.051	.4	.12	.28	....	....	....	.002	.25	4.1	16.	......	......	....
785	" 12	" 15	"	"	.2	"	684.	266.	418.	10.4	8.2	5.1	3.1	.026	.38	.112	.268	....	....	....	.005	.55	3.5	20.	......	......	14,700
822	" 19	" 20	"	"	.25	"	641.	234.	407	9.7	7.	4.6	2.4	.032	.38	.112	.268	....	....	....	.005	1.2	3.2	19	......	......	27,800
865	" 26	" 27	"	"	.15	"	596.	258.	338.	12.4	6.2	4.8	1.4	.012	.32	.112	.208	....	....	....	.002	.2	2.8	19.	......	......	22,100
908	Nov. 3	Nov. 4	"	Much	.2	"	600.	276.	324.	12.8	7.2	4.6	2.6	.028	.34	.08	.26	....	....	....	.002	.25	4.	9.	......	......	10,000
918	" 11	" 13	"	Cons'd	.15	"	478.	250.	228.	10.6	8.	6.3	1.7	.098	.3	.12	.18	....	....	....	.0	.3	5.4	9.	......	......	....
1004	" 23	" 24	"	"	.22	"	577.	245.	332.	11.	10.8	6.6	4.2	.042	.38	.112	.268	....	....	....	.006	.05	6.6	12.	......	......	12,400
1065	Dec. 7	Dec. 8	"	"	.2	"	562.	265.	297.	13.1	6.7	1.9	1.9	.052	.42	.16	.26	....	....	....	.002	.2	4.8	3.	......	......	3,700
1095	" 11	" 15	"	"	.2	"	551.	251.	297.	11.8	7.8	5.2	2.6	.06	.54	.144	.396	....	....	....	.005	.05	4.6	2.	......	......	3,200
1136	" 21	" 23	"	Much	.4	"	646.	258.	388.	13.6	8.2	5.	3.2	.02	.54	.096	.144	....	....	....	.008	.325	5.3	0	......	......	4,800

TABLE 117.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 YARDS FROM MISSOURI SHORE, JEFFERSON BARRACKS, MO.

University of Chicago.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am: Tot'l	Albuminoid Am: Dissolv'd	Albuminoid Am: Susp'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
16	May 1	May 3	Much	Much	Muddy	None	3023.	272.	2751.	6.2	15.5	5.8	9.7	.08	1.08	.08	1.	....	....	....	.014	....	....	....	....	....	....
36	" 16	" 17	Decided	"	....	"	2412.	250.	2162.	3.5	26.4	9.9	16.5	.104	1.5	.2	1.3	....	....	....	....	....	....	....	....	....	....
37	" 16	" 17	"	"	....	"	2454.	194.	2260.	3.5	27.6	8.2	19.4	.024	1.5	.2	1.3	....	....	....	....	....	....	....	....	....	....
114	June 6	June 7	"	"	.4	"	3646.	257.6	3289.4	4.45	38.7	5.9	32.4	.061	1.92	.2	1.72	....	....	....	.0	1.05	23.5	26.	....	....	24,250
158	" 16	" 17	Much	"	.2	"	3872.	256.	3616.	3.5	38.1	7.	31.1	.07	1.94	.176	.764	....	....	....	.024	.65	22.8	26.	....	....	27,000
200	" 23	" 24	"	"	.4	"	3556.	256.	3300.	2.9	28.7	7.	21.7	.096	1.36	.2	1.16	....	....	....	.0044	.625	22.	28.	....	....	27,000
233	" 29	" 30	Decided	"	.4	"	2762.4	242.4	2520.	3.	18.8	4.5	14.3	.042	1.28	.192	1.088	....	....	....	.001	.55	20.5	26.	20.	....	18,000
264	July 6	July 7	"	"	.4	"	2956.	246.4	2709.6	3.1	17.1	2.8	14.3	.07	....	....	....	....	....	....	.003	.95	22.9	26.	....	....	42,000
303	" 14	" 15	"	"	.5	"	3109.6	188.	2921.6	4.4	28.2	5.	23.2	.11	1.76	.184	1.576	....	....	....	.0	.5	23.6	28.	....	....	26,500
338	" 21	" 22	Much	"	.3	"	2732.	192.	2540.	5.9	18.5	3.	15.5	.088	1.96	.184	1.776	....	....	....	.002	.8	19.8	28.	....	....	20,000
370	" 27	" 28	"	"	.3	"	2558.	210.	2348.	4.5	17.4	4.2	13.2	.084	.81	.168	.672	....	....	....	.002	.75	16.2	30.	....	....	12,500
411	Aug. 3	Aug. 4	"	"	.0	"	2837.	278.	2559.	6.6	18.3	2.2	16.1	.04	.96	.136	.824	....	....	....	.008	.7	14.3	32.	....	....	51,000
451	" 11	" 12	"	"	.1	"	2654.	184.	2470.	5.7	17.6	3.	14.6	.056	1.	.128	.872	....	....	....	.0	1.02	14.4	29.	....	....	5,050
486	" 17	" 18	"	"	.13	"	2077.	184.	1893.	8.4	17.6	4.	13.6	.056	.74	.272	.468	....	....	....	.003	.55	13.9	29.	....	....	....
522	" 25	" 26	"	"	.0	"	1554.	194.	1360.	7.2	19.1	4.1	15.	.068	.84	.144	.696	....	....	....	.0035	.65	8.4	30.	....	....	15,950
555	" 31	Sept. 1	"	"	.0	"	1187.	212.	975.	7.4	8.6	3.8	4.8	.012	....	....	....	....	....	....	.001	.1	7.5	30.	....	....	37,000
602	Sept. 8	" 9	"	"	.0	"	898.	209.	689.	7.5	8.4	3.9	4.5	.014	.104	.08	.096	....	....	....	.0044	.075	6.3	30.	....	....	65,300
676	" 22	" 23	"	"	.1	"	864.	246.	618.	10.2	4.7	4.6	.1	.076	.44	.104	.336	....	....	....	.0	.35	6.7	19.	....	....	42,200
712	" 28	" 29	Decided	"	.15	"	726.	257.	469.	10.5	9.2	4.6	4.6	.032	.42	.128	.292	....	....	....	.002	.3	5.3	17.	....	....	23,800
755	Oct. 6	Oct. 7	Much	Cons'd	.2	"	730.	257.	473.	12.3	9.	5.2	3.8	.034	.34	.112	.228	....	....	....	.002	.35	4.1	16.	....	....	....
786	" 12	" 15	"	"	.2	"	672.	272.	400.	11.2	8.6	6.7	1.9	.012	.36	.112	.248	....	....	....	.005	.6	3.5	20.	....	....	27,400
823	" 19	" 20	"	Much	.25	"	622.	255.	367.	10.	8.6	5.2	3.4	.038	.6	.2	.4	....	....	....	.0	.0	3.2	19.	....	....	31,000
866	" 26	" 27	"	Cons'd	.15	"	626.	258.	368.	12.8	8.2	4.6	3.6	.066	.32	.112	.208	....	....	....	.002	.2	2.8	19.	....	....	34,700
909	Nov. 3	Nov. 4	"	Much	.2	"	640.	273.	367.	12.3	6.4	4.6	1.8	.048	.34	.144	.196	....	....	....	.002	.025	4.	9.	....	....	18,500
949	" 11	" 13	"	Cons'd	.15	"	567.	268.	299.	11.6	6.6	4.6	2.	.038	.18	.08	.1	....	....	....	.0	.3	5.4	9.	....	....	....
1005	" 23	" 24	"	"	.15	"	619.	264.	555.	12.8	9.3	4.4	4.9	.07	.48	.16	.32	....	....	....	.026	.05	6.6	12.	....	....	8,700
1066	Dec. 7	Dec. 8	"	"	.2	"	730.	282.	448.	14.2	6.5	3.8	2.7	.092	.44	.104	.336	....	....	....	.001	.2	4.8	3.	....	....	10,400
1096	" 14	" 15	"	Much	.15	"	634.	274.	360.	13.2	7.6	4.	3.6	.064	.28	.12	.16	....	....	....	.02	.05	4.6	2.	....	....	4,900
1137	" 21	" 23	"	"	.3	"	724.	272.	452.	15.3	7.7	4.	3.7	.038	.6	.096	.504	....	....	....	.008	.325	5.3	0.	....	....	5,900

TABLE 118.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—ST. LOUIS, MISSOURI, TAP WATER.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
119	June ..	June 7	Decided	Much	Muddy	None	337.6	307.2	30.4	4.5	8.6	7.	1.6	.051	.28	.176	.104	....	....	....	.005	.5	......	25.	26.	......	3,450
153	" 16	" 17	Much	Little	"	"	361.8	264.	100.8	4.7	7.2	7.	.2	.064	.28	.168	.112	....	....	....	.012	.45	......	26.	......	......	....
195	" 23	" 24	"	"	.6	"	396.	248.8	147.2	3.3	8.	7.7	.3	.016	.2	.192	.008	....	....	....	.0062	.7	......	24.	......	......	6,500
228	" 29	" 30	Decided	"	.4	"	504.	246.	288.	2.7	8.8	4.2	4.6	.04	.304	.256	.048	....	....	....	.001	.5	......	26.	20.	......	....
298	July 14	July 15	"	"	.5	"	378.	232.	116.	4.8	7.8	5.	2.8	.04	.272	.232	.04	....	....	....	.001	.65	......	28.	......	......	8,000
333	" 21	" 22	Much	"	.3	"	370.	228.	112.	4.6	7.	4.	3.	.062	.224	.208	.016	....	....	....	.0044	.9	......	28.	......	......	1,500
365	" 27	" 28	"	Cons'd	.5	"	338.	221.	117.	5.9	7.4	5.4	2.	.066	.168	.160	.008	....	....	....	.0026	.95	......	......	......	......	4,500
406	Aug. 3	Aug. 4	"	Little	.05	"	354.	216.	138.	5.2	5.6	2.2	3.4	.016	.16	.144	.016	....	....	....	.0	.45	......	......	......	......	7,000
416	" 11	" 12	"	"	.3	"	288.	220.	68.	6.2	5.4	5.2	.2	.006	.168	.160	.008	....	....	....	.0	.0	......	......	......	......	1,600
481	" 17	" 18	"	"	Muddy	"	336.	230.	106.	6.2	5.6	3.4	2.2	.026	.216	.136	.08	....	....	....	.004	.25	......	......	......	......	....
517	" 23	" 25	"	"	"	"	365.	199.	166.	6.	5.6	4.6	1.	.026	.216	.136	.08	....	....	....	.0	.4	......	......	......	......	700
550	" 31	Sept. 1	"	"	.05	"	290.	200.	90.	7.1	5.2	4.6	.6	.012	.08	.072	.008	....	....	....	.0024	.3	......	......	......	......	600
597	Sept. 8	" 9	"	"	.05	"	311.	212.	99.	7.1	1.4	4.	.4	.004	.128	.064	.064	....	....	....	.003	.05	......	......	......	......	....
672	" 22	" 23	"	"	.1	"	328.	237.	91.	9.	4.6	4.	.6	.012	.152	.104	.048	....	....	....	.0	.4	......	......	......	......	....
707	" 28	" 29	"	"	.2	"	346.	270.	76.	9.6	4.8	3.8	1.	.008	.128	.104	.024	....	....	....	.005	.3	......	......	......	......	1,400
750	Oct. 6	Oct. 7	"	"	.15	"	351.	268.	86.	10.7	4.5	4.2	.3	.03	.104	.096	.008	....	....	....	.001	.3	......	......	......	......	....
781	" 12	" 15	"	V. Little	.2	"	322.	281.	38.	11.6	4.5	4.	.5	.008	.128	.101	.021	....	....	....	.0	.4	......	......	......	......	670
818	" 19	" 20	"	Little	.2	"	322.	258.	64.	11.7	4.	4.	.0	.012	.112	.088	.021	....	....	....	.0	.0	......	......	......	......	2,790
861	" 26	" 27	"	"	.12	"	326.	285.	41.	13.8	4.2	3.8	.4	.018	.136	.096	.01	....	....	....	.0	.0	......	......	......	......	600
904	Nov. 3	Nov. 4	"	V. Little	.2	"	318.	280.	38.	12.5	7.6	4.6	3.	.010	.168	.096	.072	....	....	....	.002	.4	......	......	......	......	730
914	" 11	" 13	"	Little	.1	"	332.	270.	62.	14.	5.	4.3	.7	.031	.128	.072	.056	....	....	....	.0	.55	......	......	......	......	....
1000	" 23	" 24	"	"	.2	"	300.	272.	28.	15.3	5.5	5.4	.1	.012	.12	.112	.008	....	....	....	.026	.05	......	......	......	......	930
1061	Dec. 7	Dec. 8	"	"	.25	"	320.	278.	42.	15.1	4.8	4.4	.1	.008	.104	.08	.021	....	....	....	.0	.4	......	......	......	......	580
1091	" 14	" 15	"	V. Little	.2	"	313.	280.	33.	14.5	4.1	3.8	.3	.006	.22	.072	.148	....	....	....	.014	025	......	......	......	......	290
1132	" 21	" 23	"	Little	.22	"	341.	317.	27.	15.2	4.2	4.2	.0	.008	.024	.008	.016	....	....	....	.0	.35	......	......	......	......	310

TABLE 119.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—SANITARY CANAL, KEDZIE AVENUE.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of 1900 Collec-tion.	Date of 1900 Exami-nation.	Appearance. Turb'y.	Appearance. Sedi-ment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dis-solved.	Residue on Evaporation. Sus-pended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dis-solved.	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. FreeAm-monia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dis-solv'd	Nitrogen as Ammonia. Albuminoid Am Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dis-solved.	Organic Nitrogen. Sus-pended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centi-meter.
1752	Apl. 30	May 2	Much	Little	.04	Gassy	251.	250.	1.	9.	8.8	6.8	2.	2.6	.64	.2	.44	....	....	....	.008	.2	......	3.5	8.	......	....
1789	May 8	" 8	"	Much	.4	....	388.	272.	116.	18.8	18.	7.7	10.3	1.8	.8	.216	.584	....	....	....	.076	.6	......	8.	15.	......	....
1816	" 14	" 15	Distinct	Little	.2	Gassy	202.	176.	26.	8.4	6.6	5.7	.9	2.1	.56	512	.048	....	....	....	.028	.0	......	13.5	20.	......	....
1850	" 21	" 22	Much	"	.2	....	206.	196.	10.	13.4	7.7	5.3	2.4	1.8	.656	.24	.416	....	....	....	.012	.35	......	3.	9.5	......	....
1889	" 28	" 29	"	V. "	.2	....	180.	174.	6.	6.8	5.8	3.5	2.3	.4	.344	.16	.184	....	....	....	.032	.05	......	8.5	13.	......	....
1922	June 4	June 5	Distinct	Little	.25	....	166.	142.	24.	7.6	7.	5.	2.	.72	.328	.12	.208	....	....	....	.022	1.35	......	9.	14.5	......	940.000
1955	" 11	" 11	Much	"	.2	....	185.	175.	10.	10.8	5.8	3.6	2.2	1.04	.44	.112	.328	....	....	....	.009	.0	......	15.5	19.	......	1,060.000
1992	" 18	" 18	"	"	.1	Gassy	179.	154.	25.	6.9	6.3	4.6	1.7	.68	.328	.256	.072	....	....	....	.044	.056	......	12.	18.	......	2,060.000
2027	" 25	" 25	Decided	"	.3	"	195.	154.	41.	7.2	6.5	3.7	2.5	.68	.4	.168	.232	....	....	....	.036	.000	......	21.	25.	......	1,270.000
....	....	....	....	....	....	....	....	....	......	.....	....	....	....	......	......	......	......	....	....	....	....	....	......	......	......	......	....

TABLE 120

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION. Report of EDWIN O. JORDAN.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, BRIDGEPORT. University of Chicago.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
	1900 Collection.	1900 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved	By Suspd Matter	Free Ammonia.	Albuminoid Am Tot'l	Albuminoid Am Dissolv'd	Albuminoid Am Suspnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
1161	Jan 2	Jan. 3	Much	Little	.3	Gassy	446.	404.	42.	82.	24.9	16.4	8.5	11.4	2.8	1.34	1.46	....	....	....	.0	.0	4.8	0.	2.	......	670,000
1197	" 7	" 8	"	"	.3	"	421.	390.	31.	116.	19.	10.7	8 3	11.2	2.5	1.18	1.32	....	....	....	.006	.15	5.	5.	4.4	......	160,000
1237	" 15	" 16	"	"	Muddy	"	342.	314.	28.	68.	15.2	6.6	8.6	7.5	1.8	.8	1.	....	....	....	.002	.05	4.	4.5	8.3	......	290,000
1276	" 22	" 22	"	"	"	"	512.	478.	34.	141.	18.7	9.	9.7	12.6	2.5	1.36	1.14	....	....	....	.013	.1	4.6	0.	4.5	......	580,000
1301	" 28	" 29	"	"	"	"	636.	634.	2.	212.	23.4	17.8	5.6	15.6	3.8	2.8	1.	....	....	....	.004	.0	2.5	......	......	......	510,000
1327	Feb. 5	Feb. 6	"	"	"	"	408.	375.	33.	98.	17.3	9.	8.3	9.4	2.36	1.04	1.32	....	....	....	.004	.0	4.5	3.	-2.	......	510,000
1375	" 11	" 13	Slight	Cons'd.	25	"	444.	380.	64.	92.	11.6	8.1	6.2	9.4	1.78	.62	1.16	....	....	....	.028	.0	4.8	0.	4 5	......	630,000
1397	" 19	" 19	Much	Little	Muddy	"	387.	384.	3.	88.	11.7	8 4	3.3	10.	1.81	1.12	.72	....	....	....	.008	.05	4.2	7.	0.	......	370,000
1430	" 26	" 26	"	"	.25	"	384.	374.	10.	91.	12.8	9.	3.8	6.6	2.28	......	......	....	....	....	.016	.15	3.6	2.	2.	......	410,000
1417	Mar. 5	Mar. 5	"	"	.18	"	291.	282.	12.	51.	9.2	7.2	2.	4.4	1.02	.66	.36	....	....	....	.008	.05	4.	0.	6.5	......	340,000
1488	" 12	" 13	"	"	4	"	288.	257.	31.	35.5	15.3	7.4	7.9	4.2	1.21	1.08	.16	....	....	....	.1	.0	5.	0.	—4.	......	1,100,000
1521	" 20	" 20	"	"	.4	"	392.	358.	34.	84.	15.5	9.2	6.3	6.2	2.2	1.36	1.84	....	....	....	.088	.112	4.1	8.	3.	......	240,000
1559	" 26	" 26	"	"	.4	"	388.	356.	32.	88.	18.6	9.2	9.4	7.4	2.3	.78	1.52	....	....	....	.017	.3	4.	11.	13.	......	1,800,000
1596	Apr. 2	Apr. 2	"	Cons'd.	.4	"	470.	430.	40.	93.	18.7	11 6	7 1	7.4	2.	.84	1.16	....	....	....	.05	.0	4.	8.	11.	......	1.700,000
1634	" 9	" 9	"	Little	.5	"	562.	523.	39.	148.	18.9	8.8	10 1	10.8	2.	.82	1.18	...	....	....	.0	.3	3.	7.	14.	......	600,000
1673	" 16	" 16	"	Cons'd.	.2	"	437.	386.	57.	90.	17.2	7.4	9.8	7.4	1.32	48	.81	....	....	....	.002	.0	4.5	12.	16.	......	830,000
1712	" 23	" 23	"	Little	3	"	356.	290.	66.	60.	11.2	6.6	4.6	5.6	1.08	.4	.68	....	....	....	.018	.0	4.	11.	13.	......	160,000

TABLE 121.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, LOCKPORT.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1168	Jan. 2	Jan. 3	Much	Much	Muddy	Gassy	515.	410.	105.	112.	27.5	19.2	8.3	11.8	3.36	1.8	1.56	....	....	....	.0	.1	......	2.	......	......	445.000
1199	" 8	" 9	"	Cons'd.	"	"	412.	388.	24.	90.	22.	15.2	8.8	9.2	2.4	1.72	.68	....	....	....	.002	.0	......	0.	......	......	830,000
1239	" 15	" 16	"	Much	"	"	560.	478.	82.	134.	12.	11.6	.4	13.2	3.8	1.32	1.48	....	....	....	.002	.05	......	4.5	......	......	800.000
1269	" 23	" 23	"	Little	"	"	462.	428.	34.	107.	18.	8.6	9 4	9.2	2.24	.96	1.28	....	....	....	.0	.0	......	3.5	......	......	4,170,000
1303	" 29	" 30	"	"	"	"	570.	538.	32.	152.	18.6	11.4	7.2	13.4	2.22	1.7	.5	....	....	....	.012	.0	......	0.	— 8	......	290,000
1334	Feb. 5	Feb. 6	"	Cons'd.	"	"	352.	350.	2.	86.	16.6	9.8	6.8	6.6	2 24	1.32	.92	....	....	....	.014	.0	......	0.	— 9.5	......	320,000
1457	Mar. 5	Mar. 6	"	Little	"	"	440.	398.	42.	98.	19.3	11.1	8.2	7.8	2.23	1.1	1.88	....	....	....	.032	.0	......	0.	—12.	......	1,750.000
1493	" 12	" 13	"	Cons'd.	.22	"	331.	258.	73.	58.	18.8	9.4	9.4	4.4	1.88	.58	1.3	....	....	....	.096	.5	......	0	3.5	......	....
1522	" 19	" 20	"	Little	.22	"	404.	384.	20.	79.	16.6	9.6	7.	5.4	2.04	1.64	.4	....	....	....	.112	.178	......	0.	......	......	1.350.000
1563	" 26	" 28	"	"	Muddy	"	404.	362.	42.	74.	18.1	11.2	6.9	8.2	2.16	1.02	1.14	....	....	....	.012	.1	......	—5.	.	.....	8.000.000
1597	Apr. 2	Apr. 3	"	"	.5	"	514.	502.	12.	129.	19.2	12.	7.2	5.6	4.32	.86	3.46	....	....	....	.0	.0	......	0.	3.5	......	7,500,000
1636	" 9	" 10	"	"	.6	"	623.	610.	13.	175.	21.4	15.5	5.9	11.4	2.8	1.36	2.44	....	....	....	.0	.0	......	9.5	1.5	......	1.140.000
1675	" 16	" 17	"	"	.3	"	520.	500.	20.	115.	18.4	11.6	6.8	8.4	1.68	.91	.74	....	....	....	.0	.0	......	7.5	22.	......	1.610.000
1717	" 23	" 24	"	Much	.4	"	596.	531.	65.	123.	18.3	9.5	8.8	9.4	1.8	.56	1.24	....	....	....	.016	.0	......	12.	21.	......	1,250.000
1753	" 30	May 2	"	Cons'd.	.4	"	400.	303.	97.	54.	17.2	7.	10.2	4.8	1.48	.32	1.16	....	....	....	.004	.25	......	15.5	25.	......	1.850,000
1786	May ..	" 8	"	Little	.4	"	407.	386.	21.	98.	16.9	8.8	10.1	10.6	1.44	.56	.88	....	....	....	.0	.05	......	14.5	23.5	......	1.800.000
1817	" ..	" 15	"	"	.3	"	434.	406.	28.	88.	15.2	8.	7.2	7.8	.92	.28	.64	....	....	....	.0	.0	......	20.	27.5	......	610,000
1856	" ..	" 22	"	"	.4	"	440.	436.	4.	117.	15.1	8.7	6.4	12.8	1.52	.74	.78	....	....	....	.002	.0	......	15.5	26.5	......	650.000
1895	" ..	" 30	"	"	.4	"	507.	490.	17.	150.	14.9	8.7	6.2	18.2	1.4	.44	.96	....	....	....	.0	.05	......	19.	20.5	......	1.160.000
1923	" ..	June 5	"	"	.4	"	582.	526	56.	268.	17.3	12.5	4 8	20.	1.28	.57	.7	....	....	....	.0	.25	......	18.5	25.5	......	1,500.000
1957	" ..	" 12	"	"	.4	"	467.	432.	35.	106.	14.	8.6	5.4	10	1.28	.66	.62	....	....	....	.002	.0	......	18.	22.	......	1.100.000
2000	" .	" 19	"	Cons'd.	Muddy	"	692.	625.	67.	219.	23 3	14.7	8.6	20.	1.68	.86	.88	....	....	....	.0	.0	......	21.	28.	......	180,000
2032	June 25	" 25	"	"	.45	"	666.	650.	16.	232.	18.8	12.8	6.	24.	1.6	.82	.78	....	....	....	.0	.0	......	22.	31.	......	130,000

TABLE 122. STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—DESPLAINES RIVER, LOCKPORT.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Susp'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1169	Jan. 2	Jan. 3	Slight	Little	.5	....	718.	698.	20.	12.6	8.5	8.1	.4	.056	.48	.376	.104	....	....	....	.003	.45	1.	0.	......	......	2,600
1200	" 8	" 9	....	V. "	.3	....	358.	350.	8.	6.6	5.2	4.8	.4	.066	.256	.192	.064	....	....	....	.006	.1	1.	0.	......	......	14,200
1240	" 15	" 16	....	....	.15	....	448.	447.	1.	8.2	5.8	3.6	.2	.08	.256	.208	.048	....	....	....	.011	.6	1.	0.	......	......	7,100
1270	" 23	" 23	Much	Little	.32	Gassy	406.	396.	10.	7.	6.4	5.4	1.	.756	.352	.296	.056	....	....	....	.008	.6	......	4.5	......	......	88,000
1305	" 29	" 30	"	"	....	"	278.	254.	24.	4.	10.6	9.	1.6	.284	.304	.288	.016	....	....	....	.026	.4	......	0.	— 8.	......	10,900
1335	Feb. 5	Feb. 6	"	"	.7	....	322.	288.	34.	5.	9.8	8.6	1.2	.136	.304	.304	.0	....	....	....	.01	.45	......	0.	— 9.5	......	2,700
1458	Mar. 5	Mar. 6	"	"	.4	....	388.	282.	6.	6.2	8.6	8.1	.5	.392	.296	.364	.032	....	....	....	.015	1.55	......	0.	—12.	......	1,900
1494	" 12	" 13	"	Cons'd.	.4	....	150	124.	26.	3.4	8.8	6.1	2.7	.306	.328	.224	.104	....	....	....	.016	.25	......	0.	3.5	......	....
1523	" 19	" 20	"	Little	.4	....	178	138.	40.	3.2	9.	8.6	.4	.208	.352	.232	.12	....	....	....	.012	.6	......	0.	......	......	20,000
1564	" 26	" 28	"	Cons'd.	.5	....	250.	144.	106.	2.	12.	8.2	3.8	.164	.44	.218	.192	....	....	....	.018	.25	......	0.	......	......	24,000
1598	Apr. 2	Apr. 3	"	Little	.3	....	226.	191.	35.	......	8.	6.	2.	.104	.656	.364	.392	....	....	....	.03	.3	......	0.	3.5	......	....
1637	" 9	" 10	"	"	.6	....	284.	253.	31.	3.4	8.7	8.1	.6	.058	.384	.248	.136	....	....	....	.018	.0	......	10.	1.5	......	10,300
1676	" 16	" 17	"	"	.4	....	325.	322.	3.	4.8	8.9	8.4	.5	.05	.384	.384	.0	....	....	....	.008	.2	......	9.	22.	......	2,000
1718	" 23	" 24	"	"	.5	....	382.	368.	14.	4.	9.7	9.5	.2	.122	.432	.416	.016	....	....	....	.044	.7	......	9.	21.	......	3,800
1754	" 30	May 2	"	"	.5	....	452.	398.	54.	4.1	12.2	12.1	.1	.131	.432	.336	.096	....	....	....	.011	.2	......	14.5	25.	......	....
1787	May ..	" 8	"	"	.45	....	439.	378.	61.	1.8	12.4	8.5	3.9	.022	.512	.301	.208	....	....	....	.0	.05	......	13.5	......	......	2,600
1818	" ..	" 15	"	"	.5	....	396.	366.	30.	6.2	9.3	8.7	.6	.054	.344	.2	.144	....	....	....	.052	.8	......	25.5	28.	......	2,200
1857	" ..	" 22	"	"	.4	....	394.	382.	12.	6.8	8.6	8.1	.5	.091	.448	.424	.024	....	....	....	.0	.05	......	22.	26.5	......	3,300
1897	" 28	" 30	Distinct	"	.35	....	400.	396.	4.	7.8	8.5	8.4	.1	.054	.344	.296	.048	....	....	....	.006	.1	......	16.5	20.5	......	5,200
1924	June ..	June 5	Much	Cons'd.	.4	....	482.	374.	108.	8.2	11.7	8.2	3.5	.012	.188	.28	.208	....	....	....	.0	.3	......	20.5	25.5	......	30,000
1960	" ..	" 12	"	Little	.5	....	372.	360.	12.	8.4	8.	7.3	.7	.022	.408	.272	.136	....	....	....	.004	.0	......	24.0	22.	......	2,500
2001	" ..	" 19	Decided	"	.3	....	346.	338.	8.	9.4	9.3	8.8	.5	.036	.344	.28	.064	....	....	....	.0	.0	......	20.5	25.5	......	1,600
2033	" 25	" 26	Distinct	"	.5	....	374.	338.	36.	8.	8.9	8.6	.3	.056	.296	.264	.032	....	....	....	.02	.025	......	20.5	31.	......	6,500

Table 123.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of Edwin O. Jordan,
University of Chicago.

Source of Water—Drainage Channel, Bear Trap Dam, Lockport.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
	1900 Collection.	1900 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved.	By Suspd Matter.	Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Suspnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
1677	Apr. 16	Apr. 17	Much	Little	.1	....	204.	194.	10.	12.	7.9	4.8	3.1	1.18	.4	.224	.176	....	....	....	.054	.2	......	5.5	22.	......	1.700.000
1719	" 23	" 24	Decided	"	.22	....	210.	196.	14.	13.	6.2	6.2	0.	1.28	.352	.264	.088	....	....	....	.044	.3	......	10.	21.	......	380,000
1755	" 30	May 2	Slight	V. "	.2	....	190.	186.	4.	10.	4.6	4.5	.1	.84	.296	.176	.12	....	....	....	.024	.2	......	16.5	25.	......	130.000
1788	May ..	" 8	Much	"	.22	....	194.	180.	14.	15.	7.3	4.7	2.6	1.56	.512	.192	.32	....	....	....	.002	.0	......	16.5	23.5	......	3,000.000
1819	" ..	" 15	Distinct	"	.2	....	198.	196.	2.	12.	5.2	4.7	.5	1.38	.216	.064	.152	....	....	....	.052	.0	.....	25.5	28.	......	10,000
1858	" ..	" 22	Decided	"	.2	....	183.	180.	3.	13.	6.6	6.4	.2	1.46	.288	.288	.0	....	....	....	.002	.05	......	13.5	26.5	......	320.000
1896	" ..	" 30	Distinct	"	.3	....	184.	170.	14.	9.8	4.9	4.	.9	1.08	.208	.168	.08	....	....	....	.004	.05	......	16.5	20.5	......	90,000
1925	June ..	June 5	Decided	"	.25	....	200.	162.	38.	14.	6.7	4.2	2.5	1.04	.424	.128	.296	....	....	....	.0	.4	......	16.5	25.5	......	1,650.000
1961	" ..	" 12	"	"	.3	....	220.	196.	24.	15.	6.	4.5	1.5	1.74	.424	.184	.24	....	....	....	.002	.0	......	10.	21.5	......	3.800.000
2002	" ..	" 19	"	"	.2	Gassy	188.	170.	18.	12.2	6.5	5.2	1.3	1.4	.272	.16	.112	....	....	....	.0	.1	......	19.	28.	......	1,360.000
2031	" 25	" 26	"	"	.3	"	188.	186.	2.	14.	7.1	5.5	1.6	1.66	.424	.192	.232	....	....	....	.02	.0	......	19.	31.	......	400,000

TABLE 124

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—DESPLAINES RIVER, W. BANK, N. JACKSON ST., JOLIET.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1162	Jan. 2	Jan. 3	Much	Little	Muddy	Gassy	544.	506.	38.	112.	28.6	26.7	1.9	11.8	3.4	2.8	.6	....	....	....	.003	.0	......	0.	— 9.5	......	600,000
1201	" 8	" 9	"	"	"	"	490.	424.	66.	110.	18.	9.5	8.5	11.6	2.4	.92	1.48	....	....	....	.002	.0	......	10.	12.	......	1,080,000
1211	" 15	" 16	"	"	.3	"	432.	426.	6.	92.	16.	8.6	7.4	9.	2.24	1.56	.68	....	....	....	.018	.0	......	0.	0.	......	890,000
1267	" 22	" 22	"	Much	.3	"	381.	292.	89.	38.	17.8	7.6	10.2	4.2	1.28	.44	.84	....	....	....	.01	.05	......	4.5	6.	......	1,210,000
1303	" 29	" 30	"	Little	.12	"	311.	196.	115.	14.	10.2	3.8	6.4	.9	.68	.168	.512	....	....	....	.026	.0	......	0.	—16.5	......	500,000
1336	Feb. 5	Feb. 6	"	"	.1	"	220.	203.	17.	22.	10.6	3.4	7.2	2.11	.42	.248	.172	....	....	....	.014	.05	......	0.	—11.	......	410,000
1371	" 12	" 13	"	Much	Muddy	Slight	346.	236.	110.	20.	15.8	8.2	7.6	2.	1.	.312	.688	....	....	....	.061	.2	......	0.	3.5	......	630,000
1398	" 19	" 20	"	Little	"	Gassy	222.	217.	5.	11.	8.	5.7	2.3	.94	.8	.304	.496	....	....	....	.022	.2	......	0.	—13.5	......	970,000
1431	" 26	" 27	"	"	.2	"	228.	226.	2.	14.	6.2	4.2	2.	1.16	.54	.216	.324	....	....	....	.016	.5	......	0.	—14.5	......	2,050,000
1638	April 9	April 10	"	"	.35	"	386.	301.	82.	45.	11.6	6.	5.6	4.	.68	.304	.376	....	....	....	.036	.0	......	6.	4.5	....	1,050,000
1678	" 16	" 17	"	"	.15	"	285.	268.	17.	41.	7.	6.6	.4	3.	.46	.381	.076	....	....	....	.032	.0	......	6.	11.	......	1,750,000
1716	" 23	" 23	"	"	.1	"	283	272.	11.	30.	7.2	5.9	1.3	2.76	.41	.221	.216	....	....	....	.03	.1	......	?	11.	......	380,000
1756	" 30	May 2	Decided	"	.2	"	240.	227.	13.	32.	5.6	4.9	.7	3.28	.32	.096	.224	....	....	....	.018	.05	......	8.	12.	......	110,000
1782	May 7	" 8	Much	"	.3	"	300.	276.	14.	41.	9.	6.4	2.6	4.8	.296	.296	.0	....	...	....	.032	.05	......	13.	16.	......	1,120,000
1820	" 11	" 15	Distinct	"	.3	"	251.	212.	12.	30.	6.5	5.3	1.2	1.84	.31	.216	.124	....	....	....	.008	.05	......	18.	20.	......	40,000
1851	" 21	" 22	Decided	"	.2	"	218.	211.	7.	27.	6.5	6.3	.2	2.68	.42	.21	18	....	....	....	.012	.05	......	22.	21.	......	90,000
1891	" 28	" 29	"	"	.3	"	240.	226.	11.	31.	6.	4.5	1.5	3.76	.32	.221	.096	....	....	....	.015	.0	......	20.	21.	......	350,000
1926	June 4	June 5	Distinct	"	.25	"	262.	232.	30.	40.	6.1	5.7	.7	3.6	.38	.224	.156	....	....	....	.032	.5	... ..	22.	20.	......	440,000
1957	" 11	" 12	Much	"	.3	"	279.	278.	1.	42.	6.6	6.4	.2	1.32	.36	.296	.061	...	....	....	.002	.0	......	22.	16.	......	180,000
1993	" 18	" 19	Decided	"	.2	"	237.	231	3.	41.	7.	6.2	.8	5.2	.352	.232	.12	....	....	....	.02	.0	......	24.	21.	......	850,000
2029	" 25	" 26	Slight	"	.3	"	285	260.	25.	58.	7.5	7.4	.1	5.1	.376	.261	112	....	..	....	.01	.0	......	21.	32.	......	630,000

Table 125.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Source of Water—Desplaines River, Jefferson St., South Joliet.

Report of Edwin O. Jordan,
University of Chicago.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1454	Mar. 5	Mar. 6	Much	Little	.15	Gassy	282.	256.	26.	30.5	9.9	5.9	4.	3.	.96	.28	.68	....	....	....	.072	.05	......	0.	— 2.	......	1,500,000
1489	" 12	" 13	"	"	.4	"	263.	208.	55.	21.	10.8	7.2	3.6	1.62	.72	.352	.368	....	....	....	.046	1.75	......	0.	— 4.	......	900,000
1524	" 19	" 20	"	"	.4	"	214.	216.	28.	23.	13.3	8.7	4.6	2.22	.96	.464	.496	....	....	....	.022	.65	......	3.5	4.5	......	....
1560	" 26	" 27	"	"	.33	"	210.	152.	88.	9.	11.	7.2	3.8	.74	.5	.256	.244	....	....	....	.026	.2	......	4.	— 3.5	......	3,200,000
1600	April 2	April 3	"	"	.4	"	225.	198.	57.	10.	10.5	7.	3.5	.96	.58	.32	.26	....	....	....	.022	.35	......	2.	2.	......	3,600,000
1639	" 9	" 10	"	"	.32	"	254.	204.	50.	10.	7.8	5.5	2.3	.68	.44	.16	.28	....	....	....	.032	.2	......	6.	4.5	......	1,380,000
1679	" 16	" 17	"	"	.15	"	280.	270.	10.	35.	7.8	5.8	2.	2.72	.54	.368	.172	....	....	....	.028	.2	......	6.	11.	......	....
1713	" 23	" 23	"	"	.3	"	296.	278.	18.	34.	6.1	5.9	.2	3.2	.44	.272	.168	....	....	....	.002	.05	......	8.	11.	......	460,000
1757	" 30	May 2	Decided	"	.18	"	230.	222.	8.	28.	6.	4.2	1.8	5.08	.42	.136	.284	....	....	....	.016	.2	......	8.	12.	......	60,000
1783	May 7	" 8	Much	"	.3	"	266.	250.	16.	36.	8.4	5.2	3.2	4.	.56	.272	.288	....	....	....	.004	.05	......	14.	15.5	......	1,600,000
1821	" 14	" 15	Decided	"	.3	"	252.	230.	22.	27.	6.2	5.5	.7	2.6	.28	.192	.088	....	....	....	.026	.05	......	18.	20.	......	10,000
1852	" 21	" 22	"	"	.2	"	224.	224.	0.	28.	6.3	6.2	.1	2.64	.48	.24	.24	....	....	....	.02	.35	......	22.	21.	......	300,000
1892	" 28	" 29	Much	Cons'd	.3	"	310.	262.	48.	44.	8.	5.4	2.4	4.8	.68	.288	.392	....	....	....	.03	.05	......	20.	21.	......	180,000
1927	June 4	June 5	Distinct	Little	.25	"	266.	244.	22.	38.	5.9	5.9	.0	3.68	.52	.248	.272	....	....	....	.072	.63	......	22.	20.	......	600,000
1958	" 11	" 11	Decided	"	.3	"	232.	226.	6.	16.	6.	5.2	.8	1.84	.3	.184	.116	....	....	....	.024	.0	......	22.	15.5	......	1,050,000
1991	" 18	" 18	"	"	.15	"	198.	188.	10.	14.	5.6	5.	.6	1.64	.264	.152	.112	....	....	....	.07	.0	......	26.	21.	......	540,000
2030	" 25	" 29	Distinct	"	.3	"	196.	184.	12.	14.	5.5	5.5	.0	1.32	.224	.152	.072	....	....	....	.14	.1	......	24.	21.	......	430,000
....	....	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	....	......	......	......	......	....

TABLE 126.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—KANKAKEE RIVER. WILMINGTON.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1163	Jan. 2	Jan. 3	Slight	V. Little	.4	....	370.	362.	8.	4.4	8.5	8.4	.1	.006	.288	.248	.04	....	....	....	.018	3.4	2.	0.	8.	......	5,900
1202	" 8	" 9	Distinct	....	.6	....	368.	362.	6.	3.2	8.4	8.	.4	.086	.384	.28	.104	....	....	....	.03	3.35	2.	0.	0.	......	3,800
1242	" 15	" 16	Slight	V. Little	.3	....	304.	300.	4.	3.8	6.4	6.2	.2	.054	.224	.224	.0	....	....	....	.017	1.05	20.	0.	5.	......	5,100
1268	" 22	" 23	Decided	Little	.3	....	276.	254.	22.	3.2	6.5	5.7	.8	......	.256	.176	.08	....	..	....	.011	.7	20.	1.	3.	......	11,800
1306	" 29	" 30	Slight	V. Little	.35	....	298.	290.	8.	3.	7.	7.	.0	.064	.224	.216	.008	....	....	....	.024	.9	15.	2.	8.	......	5,700
1337	Feb. 5	Feb. 6	"	"	.4	....	321.	321.	0.	2.6	10.8	8.2	2.6	.056	.288	.286	.002	....	....	.. ..	.0102	.9	15.	0.	0.	......	1,600
1372	" 12	" 13	Much	Much	.4	....	848.	196.	652.	3.2	22.4	8.2	14.2	.114	.872	.216	.656	.	....	....	.017	2.5	20.	0.	9.	......	....
1399	" 19	" 20	"	Little	Muddy	....	296.	279.	17.	3.	8.	8.	.0	.208	.256	.24	.016	....	....	....	.016	1.9	12.	1.	3.	......	5,200
1186	Mar. 7	Mar. 9	"	Much	.22	....	236.	180.	56.	2.8	8.6	6.1	2.2	.102	.272	.176	.096	....	....	....	.014	2.1	......	0.	6.	......	60,000
1511	" 15	" 16	"	"	Muddy	....	536.	160.	376.	1.6	17.4	6.8	11.6	.151	.744	.208	.536	....	....	....	.0104	1.2	10.	0.	-6.	......	50,000
1525	" 19	" 20	"	Little	"	....	214.	162.	82.	2.	8.9	7.2	1.7	.104	.304	.216	.088	....	....	....	.013	1.1	20.	3.	3.	......	8,600
1561	" 26	" 27	"	"	.3	....	192.	152.	40.	1.8	8.6	7.3	1.3	061	.304	.221	.08	....	....	....	.008	1.15	20.	3.	3.	......	20,000
1599	Apr. 2	Apr. 3	"	Much	.4	....	390.	172.	218.	1.6	11.6	7.3	7.3	.071	.188	.208	.28	....	....	....	.012	2.2	20.	5.	6.	......	60,000
1635	" 9	" 9	"	Little	.22	....	348.	285.	63.	2.8	5.1	3.8	1.6	.064	.208	.152	.056	....	....	....	.011	3.1	20.	9.	4.	......	9,000
1674	" 16	" 16	Little	"	.15	....	320.	298.	22.	2.2	3.7	3.1	.6	.041	.128	.088	.01	....	....	....	.008	1.95	......	......	......	......	4,400
1711	" 23	" 23	Decided	"	.25	....	307.	271.	36.	3.2	3.6	3.6	.0	.022	.176	.088	.088	....	....	....	.0022	3.	20.	.....	......	......	1,100
1751	" 30	" 30	Slight	V. Little	.25	....	338.	331.	4.	4.6	3.9	3.9	.0	.016	.144	.12	.024	....	....	....	.03	1.65	20.	11.5	10.	......	6,100
1781	May 7	May 7	Much	Little	.8	....	318.	296.	22.	2.8	16.6	15.2	1.4	.038	.556	.496	.072	....	....	....	.006	.1	24.	15.5	15.	......	1,500
1815	" 11	" 15	"	"	.6	....	329.	278.	51.	2.4	12.1	9.6	2.5	.061	.152	.344	.088	....	....	....	.016	1.35	.....	20.5	22.	.....	2,100
1853	" 21	" 22	"	"	.7	....	318.	300.	18.	2.1	14.8	11.5	.3	.068	.464	.376	.088	....	....	....	.01	1.1	18.	15.	11.5	......	2,300
1890	" 28	" 29	"	"	.5	....	320.	286	31.	2.4	9.1	8.2	.9	.038	.296	.224	.072	....	....	....	.03	.85	20.	20.	18.	.. ...	6,000
1921	June 4	June 4	"	"	.3	....	321.	292.	29.	3.6	5.6	5.6	.0	.216	.2	.168	.032	....	....	....	.03	1.1	20.	16.5	15.5	.. ...	3,300
1956	" 11	" 11	"	"	.3	....	352.	306.	16.	3.2	6.2	4.4	1.8	.066	.181	.112	.072	....	...	....	.014	1.8	20.	19.	18.	.. ...	16,200
1995	" 18	" 18	"	"	.3	....	317.	276.	11.	3.	9.	8.6	.1	.04	.24	.21	.0	....	...	....	.0	.85	18.	19.	14.5	......	73,000
2028	" 23	" 25	"	"	.5	.. ....	326.	281.	42.	3.	9.1	7.6	1.5	.62	.256	.232	.021	....	....	....	.075	.2	20.	22.	20.	......	4,000

TABLE 127.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—ILLINOIS RIVER, MORRIS.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
1196	Jan. 5	Jan. 8	Much	Little	.6	Gassy	420.	412.	8.	60.	17.7	13.4	4.3	7.9	1.7	1.008	.692	....	....	....	.12	.03	5.	0.	4.	......	....
1209	" 10	" 11	"	Much	.5	"	414.	412.	2.	85.	14.2	9.	5.2	8.4	1.62	1.024	.596	....	....	....	.026	.05	5.	0.	5.	......	1,224,000
1248	" 16	" 18	"	Little	.3	"	366.	348.	18.	50.	8.4	6.4	2.	6.4	.74	.48	.26	....	....	....	.016	.5	5.	2.	2.	......	1,200,000
1296	" 26	" 27	"	Much	.15	"	437.	220.	217.	23.	16.	4.4	11.6	1.84	1.48	.22	1.26	....	....	....	.03	.4	4.9	0.	—6.	......	1,230.000
1307	" 29	" 30	"	Little	.12	"	274.	226.	48.	17.	7.8	4.6	3.2	1.68	.38	.224	.156	....	....	....	.032	.55	4.8	0.	—6.	......	290,000
1338	Feb. 5	Feb. 8	"	"	.2	"	260.	222.	38.	15.	6.5	5.	1.5	2.44	.432	.288	.144	....	....	....	.024	.2	3.1	0.	0.	......	215.000
1373	" 12	" 15	"	Much	.4	....	612.	205.	407.	11.	18.8	9.4	9.4	1.04	.92	.224	.696	....	....	....	.11	.65	9.2	5.	4.	......	320.000
1400	" 19	" 20	"	Little	Muddy	....	314.	250.	64.	24.	11.	6.1	4.9	1.96	.752	.304	.448	....	....	....	038	.9	7.9	0.	—3.	......	520.000
1461	Mar. 7	Mar. 8	"	"	.4	....	303.	262.	41.	28.	8.	5.8	2.2	2.8	.624	.272	.352	....	....	....	.036	.0	6.4	0.	5.	......	1,000,000
1500	" 14	" 15	"	Much	.25	....	450.	136.	314.	5.	17.3	6.2	11.1	.36	.68	.144	.536	....	....	....	.015	.6	16.6	0.	—3.	......	310,000
1526	" 19	" 22	"	Cons'd.	.3	....	324.	184.	140.	12.	12.8	7.2	5.6	1.008	.616	.288	.328	....	....	....	.034	.9	......	0.	0.	......	800.000
1571	" 28	" 29	"	Little	.2	....	226.	188.	38.	11.8	8.4	7.	1.4	.84	.544	.296	.248	....	....	....	.05	.8	12.5	1.	—1.	......	1,000,000
1602	Apr. 3	Apr. 4	"	Cons'd.	.3	....	368.	170.	198.	9.2	11.6	6.8	4.8	1.86	.544	.248	.296	....	....	....	.018	1.15	11.6	6.	9.	......	940,000
1640	" 9	" 10	"	"	.32	....	264.	240.	24.	19.	11.2	9.6	1.6	1.62	.44	.288	.152	....	....	....	.054	.55	7.5	8.	5.	......	390,000
1680	" 16	" 17	"	"	.2	....	293.	263.	30.	26.	8.3	6.2	2.1	1.6	.44	.288	.152	....	....	....	.026	.5	5.8	9.	15.	......	225,000
1715	" 23	" 23	Decided	Little	.3	....	264.	258.	6.	15.	7.6	5.9	1.7	1.48	.296	.192	.104	....	....	....	.07	.2	6.	10.	15.	......	60,000
1758	" 30	May 2	Distinct	"	.14	....	302.	296.	6.	38.	7.6	7.4	.2	3.96	.384	.352	.032	....	....	....	.034	.3	4.4	15.	21.	......	22,000
1784	May 7	" 8	Decided	"	.25	....	239.	208.	21.	18.	6.4	5.5	.9	2.12	.296	.168	.128	....	....	....	.032	.05	4.4	14.	23.	......	13,000
1822	" 15	" 16	"	"	.4	....	236.	320.	6.	19.	7.2	6.3	.9	1.84	.304	.272	.032	....	....	....	.14	.4	4.5	18.	28.	.....	4,000
1854	" 21	" 22	Distinct	"	35	....	242.	236.	6.	22.	6.8	6.5	.3	1.72	.328	.288	.04	....	....	....	.12	.8	3.6	16.	17.	......	7,000
1893	" 28	" 29	"	"	.3	....	206.	200.	6.	18.	6.6	6.5	.1	.156	.28	.184	.096	....	....	....	.066	.2	4.3	16.	23.	......	14,000
1928	June 4	June 5	Decided	"	.25	....	266.	224.	42.	14.	7.7	6.1	1.6	1.28	.36	.208	.152	....	....	....	.094	.01	5.3	17.	23.	......	640,000
1962	" 11	" 12	Slight	"	.3	....	276.	148.	128.	22.	9.	6.6	2.4	1.92	.304	.244	.08	....	....	....	.12	.5	4.	19.	20.	......	119.000
1996	" 18	" 19	Distinct	"	.2	....	219.	214.	5.	18.6	6.3	5.6	.7	2.04	.264	.2	.064	....	....	....	.368	.0	3.8	18.	25.	......	88,000
2037	" 26	" 27	....	"	.22	....	247.	228.	19.	21.	7.1	6.2	.9	1.8	.264	.176	.088	....	....	....	.2	.35	4.3	21.	30.	......	24.000

TABLE 128.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.

SOURCE OF WATER—FOX RIVER, OTTAWA.

University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1173	Jan 4	Jan 5	Slight	V. Little	.15	....	448.	448.	0.	6.8	5.7	5.7	.0	.078	.296	.272	.024	....	....	...	.004	.2	3.	2.	2.	......	3,700
1220	" 11	" 12	"	"	.1	....	312.	310.	2.	6.	4.4	4.	.4	.066	.24	.168	.072	....	....	....	.016	.5	3.5	2.	2.	......	30,200
1249	" 18	" 19	"	Little	.3	....	309.	294.	15.	6.	4.1	3.8	.3	.09	.2	.16	.04	....	....	....	.01	.4	3.	3.	3.	......	12,600
1282	" 21	" 26	Much	"	Muddy	....	310.	282.	28.	1.2	7.4	6.2	1.2	.31	.336	.208	.128	....	....	....	.016	.8	4.	4.	4.	......	25,300
1491	Mar. 12	Mar. 13	"	Cons'd.	.3	....	196.	170.	26.	1.2	8.6	7.3	1.3	.256	.384	.224	.16	....	....	....	.014	.9	4.	5.	4.	......	....
1528	" 20	" 21	"	Little	.3	....	230.	209.	21.	3.4	8.5	7.4	1.1	.294	.32	.216	.104	....	....	....	.016	.6	4.	3.	2.	......	1,100
1568	" 27	" 28	Slight	V. Little	.4	....	304.	165.	139.	2.6	15.2	7.8	5.4	.156	.584	.288	.296	....	....	....	.02	.8	5.	2.	7.	......	50,000
1603	Apr. 3	Apr. 4	Much	Much	5	....	731.	141.	590.	2.2	19.6	8.3	11.3	.244	1.12	.344	.776	....	....	....	.018	1.2	4.	3.	16.	......	200,000
1642	" 10	" 11	"	Cons'd.	.42	....	305.	208.	97.	2.	13.	10.1	2.9	.16	.296	.288	.008	....	....	....	.022	.5	4.	3.	11.	......	5,800
1681	" 17	18	Decided	"	.3	....	290.	248.	42.	2.8	2.7	2.7	.0	.02	.416	.232	.189	....	....	....	.014	.0	......	4.	4.	......	7,500
1722	" 24	" 25	Much	"	.4	....	334.	272.	62.	3.	10.	8.1	1.9	.06	.514	.32	.224	....	....	....	.014	.0	4.5	......	27.	......	8,600
1759	May 1	May 2	"	"	.4	....	280.	262.	18.	3.8	12.9	9.	3.9	.016	.624	.304	.32	....	....	....	.002	.05	4.	27.	27.	......	2,100
1790	" 8	" 9	"	Little	.4	....	304.	268.	36.	3.4	14.9	8.9	6.	.018	.504	.296	.208	....	....	....	.006	.0	3.5	19.	19.	......	8,500
1823	" 15	" 16	Decided	"	.4	....	307.	301.	6.	1.	8.6	7.8	8.	.046	.384	.274	.11	...	....	....	.0	.05	3.5	22.	22.	......	800
1859	" 22	" 23	Much	"	.4	....	276.	262.	14.	1.2	8.9	7.4	1.5	.02	.488	.312	.176	....	....	....	.006	.35	3.5	19.	19.	......	800
1930	June 5	June 6	Slight	"	.35	....	314.	312.	2.	3.4	7.3	7.2	.1	.1	.4	.352	.018	....	....	....	.013	.15	3.	23.	24.	......	2,200
1963	" 11	" 12	Decided	"	4	....	331.	307.	24.	4.6	8.2	7.2	1.	.018	.36	.272	.088	....	....	....	.0	.0	......	25.	26.	......	6,200
1997	" 18	" 19	Distinct	"	.25	....	328.	285.	43.	3.2	6.8	6.2	.6	.038	.232	.224	.008	....	....	...	.0	.0	3.	26.	21.	......	2,600
2035	" 25	" 26	Slight	"	.25	....	296.	276.	20.	5.	5.7	5.5	.2	.07	.256	.224	.032	....	....	....	.036	.05	2.5	27.	32.	......	2,600

TABLE 129.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, OTTAWA.

Report of EDWIN O. JORDAN.
University of Chicago.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1174	Jan. 4	Jan. 5	Distinct	V. Little	.28	....	434.	406.	28.	36.	9.5	8.9	.6	8.	.76	.624	.136	....	....	....	.15	1.45	3.5	2.	2.	......	40,000
1221	" 11	" 12	Much	Little	.35	....	332.	331.	1.	23.	10.8	8.5	2.3	4.2	.74	.44	.3	....	....	....	.1	1.55	3.	2.	2.	......	225,000
1250	" 18	" 19	"	"	.4	....	433.	322.	111.	28.	7.8	7.	.8	3.	.56	.352	.208	....	....	....	.028	.95	3.5	2.	3.	......	173,600
1283	" 25	" 26	"	"	Muddy	Gassy	350.	298.	52.	24.	12.6	5.6	7.	2.96	.7	.336	.364	....	...	....	.03	.65	5.5	4.	4.	......	570,000
1340	Feb. 5	Feb. 6	"	"	.22	....	256.	250.	6.	20.	6.2	5.2	1.	1.6	.32	.216	.101	....	....	....	.026	.15	5.5	0.	3.	......	47,000
1402	" 20	" 21	Decided	"	.5	....	314.	300.	14.	15.5	8.4	7.5	.9	1.6	.44	.296	.144	....	....	....	.62	.38	5.5	3.	16.	......	10,000
1455	Mar. 5	Mar. 6	Much	"	.3	....	316.	310.	6.	15.5	8.	7.3	.7	1.36	.296	.288	.008	....	....	....	.034	1.9	5.	3.	3.	......	32,000
1490	" 12	" 13	"	Cons'd	.4	....	254.	174.	80.	8.	8.9	6.	2.9	.88	.424	.192	.032	....	....	....	.024	.55	5.	5.	4.	......	900,000
1529	" 20	" 21	"	Little	.4	....	208.	199.	9.	3.	3.6	3.4	.2	.48	.128	.04	.088	....	....	....	.032	.6	3.	3.	—2.	......	68,000
1568	" 27	" 28	"	"	.12	....	272.	259.	13.	7.8	6.1	4.6	1.5	.44	.176	.168	.008	....	....	....	.068	2.9	4.	2.	7.	......	210,000
1604	Apr. 3	Apr. 4	Decided	"	.3	....	414.	384.	30.	5.8	7.	0.8	.2	1.14	.28	.176	.104	....	....	....	.07	1.	5.	3.	16.	......	165,000
1643	" 10	" 11	Much	"	.4	....	410.	391.	19.	7.6	11.6	10.2	1.4	1.04	.424	.256	.168	....	....	....	.06	1.2	5.	3.	11.	......	12,000
1682	" 17	" 18	Decided	"	.45	....	424.	410.	14.	7.2	8.6	7.5	1.1	.746	.576	.368	.208	....	....	....	.1	1.	4.	4.	4.	......	6,000
1723	" 24	" 25	"	"	.4	....	375.	375.	0.	5.6	12.9	9.3	3.6	.184	.752	.424	.328	....	....	....	.082	.5	3.5	......	27.	......	5,000
1760	May 1	May 2	Much	"	.4	....	352.	252.	100.	10.4	13.2	8.1	5.1	.424	.48	.248	.232	....	....	....	.08	.8	3.5	27.	27.	......	1,700
1791	" 8	" 9	Decided	"	.4	....	246.	242.	4.	15.8	8.4	7.9	.5	1.024	.304	.216	.088	....	....	....	.18	.42	3.	19.	19.	......	7,300
1824	" 15	" 16	"	"	.4	....	312.	302.	10.	17.	7.8	7.6	.2	.66	.384	.274	.11	....	....	....	.6	.6	3.	22.	22.	......	1,800
1860	" 22	" 23	"	"	.4	....	262.	246.	16.	14.	8.	6.6	1.4	.46	.328	.28	.048	....	....	....	.16	.6	3.	19.	19.	......	2,000
1931	June 5	June 6	"	"	.4	....	273.	240.	33	16.	7.4	6.1	1.3	.96	.344	.328	.016	....	....	....	.3	.0	3.	23.	24.	......	17,300
1964	" 11	" 13	"	"	.3	....	286.	280.	6.	14.	7.6	6.2	1.4	.82	.264	.192	.072	....	....	....	.3	.4	3.	25.	26.	......	29,000
1998	" 18	" 19	Distinct	"	.2	....	258.	214.	44.	21.	6.6	6.2	.4	1.36	.232	.208	.024	....	....	....	.3	.3	3.	24.	25.	......	12,100
2036	" 25	" 26	....	"	.22	....	274.	242.	32.	21.8	6.	5.5	.5	.88	.192	.176	.016	....	....	....	1.	.35	3.5	29.	32.	......	17,000
....	....	....	....	....	......	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	......	....	......	......	......	......	....
....	....	....	....	....	......	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	......	....	......	......	......	......	....

TABLE 130

STREAMS EXAMINATION — CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—BIG VERMILLION RIVER, LA SALLE.

Report of EDWIN O. JORDAN.
University of Chicago.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am Tot'l	Albuminoid Am Dis-solv'd	Albuminoid Am Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
1164	Jan. 2	Jan. 3	....	V. Little	.1	....	609.	581.	23.	22.	3.	2.4	.6	.168	.08	.072	.008	....	....	....	.032	4.5	......	......	......	......	4,000
1204	" 9	" 10	....	"	.4	....	662.	660.	2.	24.	2.4	2.2	.2	.4	.104	.096	.008	....	....	....	.04	2.85	......	......	......	......	5,400
1243	" 16	" 17	Slight	"	05	....	534.	534.	0.	30.	2.3	2.2	.1	.290	.136	.072	.064	....	....	....	.04	1.7	......	......	......	......	3,900
1271	" 23	" 21	Much	Cons'd	.12	....	420.	338.	82.	8.	6.	2.1	3.9	.128	.248	.104	.144	....	....	....	.32	3.08	......	......	......	......	20,100
1308	" 30	" 31	Slight	V. Little	.12	....	432.	430.	2.	11.	2.6	2.6	.0	.13	.104	.104	.0	....	....	....	.01	2.75	......	......	......	......	6,000
1341	Feb. 6	Feb. 7	"	"	.1	....	570.	563.	7.	22.	5.	2.4	2.6	.202	.88	.072	.808	....	....	....	.026	1.55	......	......	......	......	1,800
1377	" 13	" 14	Much	Much	.2	....	630.	251.	379.	6.	15.2	4.4	8.8	.096	.712	.176	.536	....	....	....	.016	3.4	......	......	......	......	79,000
1403	" 20	" 21	Slight	Little	.2	....	362	358.	4.	8.	3.	2.3	.7	.106	.128	.104	.024	....	....	....	.012	3.65	......	......	......	......	7,500
1434	" 27	" 28	Much	Cons'd	.6	....	278.	262.	16.	4.5	7.6	6.	1.6	.08	.24	.192	.048	....	....	....	.022	3.	......	......	......	......	50,000
1462	Mar. 6	Mar. 8	"	Little	.1	....	380.	350.	30.	9.4	2.6	2.6	.0	.111	.088	.072	.016	....	....	....	.02	4.85	......	......	......	......	7,500
1495	" 13	" 14	"	Much	.2	....	550.	98.	452.	2.6	19.6	8.8	10.8	.206	1.064	.296	.768	....	....	....	.011	.65	......	......	......	......	150,000
1530	" 20	" 21	"	"	.2	....	396.	220.	176.	1.	8.8	3.4	5.4	.048	.312	.088	.224	....	....	...	.014	2.3	......	......	......	......	30,000
1565	" 27	" 28	"	Little	.12	....	312.	296.	16.	4.8	4.	2.8	1.2	.066	.128	.088	.04	....	....	....	.02	.39	......	......	......	......	10,000
1605	Apr. 3	Apr. 4	"	Much	.3	....	618.	228.	390.	3.	15.5	4.1	11.4	.054	.544	.128	.416	....	....	....	.016	3.05	......	......	......	......	19,000
1644	" 10	" 11	"	Little	.18	....	338.	304.	34.	4.6	5.8	4.6	1.2	.064	.136	.088	.048	....	....	....	.012	.5	17.6	......	......	......	2,700
1683	" 17	" 18	Decided	Cons'd	1	....	366.	336.	30.	6.2	8.4	8.1	.3	.064	.16	.088	.072	....	....	....	.036	1.4	......	......	......	......	2,100
1724	" 24	" 25	"	Little	.25	....	340.	308.	32.	4.4	4.6	3.5	1.1	.036	.128	.08	.048	....	....	....	.022	5.2	......	......	......	......	7,300
1761	May 1	May 2	Slight	"	.2	....	370.	367.	3.	8.	3.	3.	.0	.016	.112	.096	.016	....	....	....	.016	2.25	14.8	......	......	......	600
1792	" 8	" 9	Much	Much	.35	....	488.	308.	180.	8.1	6.5	4.9	1.6	.106	.4	.184	.216	....	....	....	.028	1.9	......	......	......	......	30,000
1825	" 15	" 16	Decided	Little	.2	....	406.	390.	16.	11.	3.	2.7	.3	.022	.128	.088	.04	....	....	....	.028	1.35	14.	......	......	......	1,300
1861	" 22	" 23	Distinct	"	.3	....	396.	376.	20.	11.4	3.5	3.3	.2	.022	.184	.12	.064	....	....	....	.024	1.65	11.4	......	......	......	1,500
1898	" 29	" 30	Decided	"	.2	....	391.	385.	9.	10.6	4.6	4.1	.5	.12	.2	.128	.072	....	....	....	.28	2.12	......	......	......	......	7,800
1932	June 5	June 6	Slight	"	.3	....	360.	360.	[illegible]	6.2	3.6	3.1	.5	.03	.216	.192	.024	....	....	....	.03	.15	......	......	......	......	3,000
1966	" 12	" 13	Decided	"	.2	....	346.	344.	2.	7.	4.3	3.4	.9	.02	.192	.136	.056	....	....	....	.026	2.15	11.8	......	......	......	3,200
2003	" 19	" 20	"	"	.15	....	434.	386.	48.	13.2	4.	3.4	.6	.026	.128	.112	.016	....	....	....	.026	2.15	......	......	......	......	5,400
2038	" 26	" 27	Much	Much	.4	....	478.	166.	312.	2.4	18	6.5	11.5	.078	.664	.144	.520	....	....	....	.024	.65	......	......	......	......	40,000

TABLE 131.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN,
University of Chicago.

SOURCE OF WATER—ILLINOIS RIVER, LA SALLE.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1165	Jan. 2	Jan. 3	Decided	V. Little	.35	....	416.	412.	4.	39.	8.	7.5	.5	3.9	.58	.392	.188	....	....	....	.054	2.9	......	......	......	......	30.100
1205	" 9	" 10	"	"	.4	....	378.	374.	4.	68.	8.	7.5	.5	.4	.6	.56	.04	....	....	....	.072	.6	......	......	......	......	18,200
1244	" 16	" 17	"	Little	.2	....	354.	354.	0.	53.	7.2	6.4	.8	.3	.34	.296	.044	....	....	....	.028	.75	......	......	......	......	154,800
1272	" 23	" 24	Much	Cons'd	.35	Gassy	318.	292.	56.	21.	8.6	6.5	2.1	2.3	.74	.328	.412	....	...	....	....	.62	12.4	......	......	......	317,000
1309	" 30	" 31	"	V. Little	.22	....	292.	274.	18.	14.	5.4	5.4	.0	1.3	.44	.288	.152	...	....	....	.018	.0	12.6	......	......	......	195,000
1342	Feb. 6	Feb. 7	Slight	Little	.27	....	294.	285.	9.	16.	6.4	5.6	.8	1.48	.34	.192	.148	....	....	....	.03	.4	1.	......	......	......	9,000
1378	" 13	" 14	Much	Much	.6	....	472.	218.	254.	9.	17.2	7.6	9.6	.76	.712	.272	.44	....	....	....	.06	1.7	18.3	....	......	......	195.000
1404	" 20	" 21	"	Little	.45	....	270.	254.	16.	13.	8.6	7.3	1.3	1.2	.464	.248	.216	....	....	....	.028	1.85	14.9	......	......	......	53,000
1435	" 27	" 28	"	"	.3	....	279.	252.	27.	12.	9.	7.6	1.4	1.04	.408	.24	.168	....	....	....	.036	1.3	.....	......	......	......	200,000
1463	Mar. 6	Mar. 8	"	"	.25	....	274.	249.	25.	12.	7.2	5.8	1.4	1.32	.296	.168	.128	....	....	....	.028	1.55	14.6	......	......	......	28.000
1496	" 13	" 14	"	Much	.5	....	444.	92.	352.	7.	19.4	8.2	11.2	.4	.96	.248	.712	....	....	....	.012	.5	25.5	......	......	......	320,000
1531	" 20	" 21	"	Cons'd	.4	....	248.	188.	60.	6.	8.8	6.7	2.1	.504	.328	.176	.152	....	....	....	.03	1.4	23.	......	......	......	120,000
1566	" 27	" 28	"	Little	.4	....	244.	160.	84.	4.8	9.2	6.8	2.4	.336	.44	.248	.192	....	....	...	.016	1.6	19.6	......	......	......	260,000
1606	Apl. 3	Apl. 4	"	Much	.4	....	430.	186.	244.	4.8	15.2	7.5	7.7	.336	.464	.192	.272	....	....	....	.016	1.3	21.	......	......	......	360,000
1645	" 10	" 11	"	Little	.4	....	276.	230.	46.	8.6	9.6	9.5	.1	.536	.432	.256	.176	....	....	....	.026	1.	17.6	......	......	......	65.000
1681	" 17	" 18	Decided	Cons'd	.3	....	298.	245.	53.	10.	8.8	5.8	3.	.528	.368	.246	.122	....	....	....	.052	.55	15.6	......	......	......	16.000
1725	" 24	" 25	"	Little	.4	....	282.	260.	22.	9.4	8.2	7 8	.4	.504	.36	.288	.072	....	....	....	.076	.1	16.	......	......	......	25.000
1762	May 1	May 2	Much	"	.5	....	276.	260.	16.	5.6	12.8	8.9	3.9	.112	.416	.304	.112	....	....	....	.06	1.	14.8	.....	......	......	4.600
1793	" 8	" 9	"	"	.4	....	307.	246.	61.	15.2	9.1	7.9	1.2	.112	.44	.44	.0	....	....	....	.17	.38	15.3	......	......	......	8.500
1826	" 15	" 16	Decided	"	.4	....	282.	266.	16.	12.	7.3	7.2	.1	.176	.22	.208	.012	....	....	....	.36	1.	14.	......	......	......	1,800
1862	" 22	" 23	"	"	.4	....	268.	266	2.	13.	7.7	7.4	.3	.256	.342	.256	.086	....	....	...	.2	1.1	11.4	......	......	......	5.700
1899	" 29	" 30	Distinct	"	.3	....	229.	226.	3.	14.	6.	6.	.0	.128	.232	.168	.064	....	....	....	.14	.86	11.6	......	......	......	8.600
1933	June 5	June 6	Much	"	.35	....	263.	226.	37.	14.	7.9	6.5	1.4	.216	.304	.152	.152	....	....	....	.28	.0	12.8	......	......	......	25.500
1969	" 12	" 13	Decided	"	.4	....	287.	258.	27.	19.	6.6	6.	.6	.416	.288	.184	.104	....	....	....	.4	1.5	11.8	......	......	......	3,900
2004	" 19	" 20	"	"	.2	....	260.	225.	35.	16.6	6.5	5.8	.7	.728	.224	.208	.016	....	....	....	.3	1.05	11.6	......	......	......	11.000
2039	" 26	" 27	Distinct	"	.3	....	231.	225.	6.	18.	7.	5.6	1.4	.68	.256	.152	.104	....	....	....	.25	.35	12.4	......	......	......	3,700
....	....	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	......	......	......	......	......	....

TABLE 132.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, LA SALLE.

Report of EDWIN O. JORDAN, University of Chicago.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1166	Jan. 2	Jan. 3	Decided	V. Little	.3	....	560.	540.	20.	51.	8.1	8.1	.0	3.6	.56	.48	.08	....	....	....	.28	2.85	9.6	......	......	......	30.000
1206	" 9	" 10	"	"	.3	....	422.	414.	8.	41.	7.6	7.1	.5	3.32	.58	.408	.172	....	....	....	.2	1.1	9.9	......	......	......	13.000
1245	" 16	" 17	Much	Little	.3	....	494.	492.	2.	28.	9.2	8.2	1.	3.84	.94	.464	.476	....	....	....	.24	.85	10.	......	......	......	3.000
1273	" 23	" 24	"	"	.25	....	418.	385.	33.	31.	11.8	6.5	5.3	3.	.66	.296	.364	....	....	....	....	.34	12.4	......	......	......	113.000
1310	" 30	" 31	"	V. Little	.3	....	338.	336.	2.	22.	6.1	6.1	.0	2.04	.44	.288	.152	....	....	....	.03	.9	12.6	......	......	......	119.000
1343	Feb. 6	Feb. 7	Decided	Little	.25	....	311.	291.	17.	19.	6.	5.9	.1	1.48	.28	.224	.056	....	....	....	.024	.85	11.4	......	......	......	17.000
1379	" 13	" 14	"	Much	.7	....	418.	281.	137.	11.	15.	8.	7.	1.28	.712	.352	.36	....	....	....	.016	.8	18.3	......	......	....	52.000
1405	" 20	" 21	"	Cons'd	.4	....	322.	239.	83.	11.5	9.2	8.2	.1	1.04	.432	.296	.136	....	....	....	.04	.8	14.9	......	......	......	127.000
1436	" 27	" 28	"	Little	.6	....	272.	234.	38.	12.	9.	8.	1.	1.08	.38	.272	.108	....	....	....	.044	1.	15.6	......	......	......	140.000
1464	Mar. 6	Mar. 8	"	"	.6	....	256.	232.	24.	11.	8.1	7.3	1.1	1.04	.384	.192	.192	....	....	....	.036	1.25	14.6	......	......	.....	26.000
1497	" 13	" 14	"	Much	.2	....	236.	126.	110.	6.	11.7	6.4	5.3	.72	.496	.184	.312	....	....	....	.026	.8	25.3	......	......	......	119.000
1532	" 20	" 21	"	Little	.3	....	210.	170.	40.	5.	9.	7.5	1.5	1.08	.448	.288	.16	....	....	....	.03	.8	......	......	......	......	85.000
1567	" 27	" 28	"	"	Muddy	....	220.	170.	50.	7.6	7.1	6.2	1.2	.6	.32	.208	.112	....	....	....	.044	1.2	19.6	......	......	......	105.000
1607	Apr. 3	Apr. 4	"	"	.4	....	286.	246	40.	12.2	7.6	6.2	1.4	.92	.304	.176	.128	....	....	....	.058	1.2	21.	......	......	......	180.000
1646	" 10	" 11	"	Cons'd	.35	....	376.	336.	40.	15.6	8.5	6.4	2.1	1.	.56	.52	.04	....	....	....	.066	2.4	17.6	......	......	......	62.000
1685	" 17	" 18	"	Little	.3	....	372.	338.	34.	15.	7.7	6.8	.9	.6	.352	.176	.176	....	....	....	.074	1.1	15.6	.....	......	......	12.000
1726	" 24	" 25	"	"	.25	....	311.	360.	34.	13.	7.9	5.7	2.2	.5	.384	.16	.224	....	....	....	.072	1.3	......	......	......	......	33.000
1763	May 1	May 2	"	"	.25	....	372.	332.	40.	14.2	5.6	5.4	.2	.21	.288	.184	.104	....	....	....	.051	.9	14.8	......	.....	......	9.400
1794	" 8	" 9	"	"	.3	....	406.	368.	38.	15.4	7.7	6.3	1.4	.72	.336	.224	.112	....	....	....	.01	.5	......	......	......	......	25.000
1827	" 15	" 16	"	"	.3	....	366.	344.	22.	12.	7.7	7.3	.4	6.	.368	.256	.112	....	....	....	.34	.0	14.	......	......	......	3.900
1863	" 22	" 23	Much	"	.3	....	400.	351.	49.	15.	7.7	7.7	.0	.76	.384	.312	.072	....	....	....	.03	.8	......	......	......	......	5.400
1900	" 29	" 30	Decided	"	.35	....	408.	354.	54.	14.	8.7	6.2	2.5	.72	.496	.296	.2	....	....	....	.066	.0	11.6	......	......	......	21.200
1934	June 5	June 6	Much	"	.3	....	351.	326.	28.	13.	7.8	7.3	.5	.256	.376	.272	.101	....	....	....	.054	.1	12.8	......	......	......	6.700
1968	" 12	" 13	Decided	"	.4	....	347.	318.	29.	12.2	8.1	7.6	.5	.72	.352	.32	.132	....	....	....	.044	.5	11.8	......	......	......	32.000
2005	" 19	" 20	"	"	.2	....	362.	335.	27.	11.	9.2	8.3	.9	.88	.4	.344	.056	....	....	....	.012	.25	11.6	......	......	......	28.800
2040	" 26	" 27	Distinct	"	.3	....	226.	216.	10.	12.	.8	7.8	.2	.312	.1	.264	.136	....	....	....	.024	.35	......	......	......	......	36.400
...	....	....	....	....	....	....	......	......	......	......	......	......	......	......	......	......	......	....	....	....	....	......	..	......	......	......	....

Table 133.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Source of Water—Illinois River, Henry.

Report of Edwin O. Jordan, University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
1170	Jan. 3	Jan. 4	Decided	V. Little	.22	....	381.	380.	1.	22.	7.8	7.8	.0	1.92	.352	.304	.048	....	....	....	.048	3.05	7.1	0.	—15.	......	9,400
1207	" 9	" 10	Slight	"	.3	....	348.	338	10.	31.	7.6	7.6	.0	3.32	.416	.296	.12	....	....	....	.06	1.2	7.3	0.	2.	......	1.000
1246	" 16	" 17	Distinct	Little	.35	....	335.	333.	2.	31.	7.8	7.8	.0	2.8	.44	.296	.144	....	....	....	.05	1.	6.5	0.	1.	......	8.500
1271	" 23	" 24	Much	Cons'd	.3	....	320.	290.	30.	18.	7.7	5.6	2.1	1.96	.456	.28	.176	....	....	....	....	.42	8.2	2.	3.	......	266,000
1311	" 30	" 31	"	Little	.3	....	308.	306.	2.	16.	6.1	5.6	.5	1.4	.376	.2	.176	....	....	....	.01	.3	7.6	0.	0.	......	164,000
1339	Feb. 5	Feb. 6	"	"	.3	....	278.	276.	2.	15.	6.3	6.3	.0	1.16	.296	.24	.056	....	....	....	.025	.2	7.4	0.	12.	......	166.000
1374	" 12	" 13	"	Much	.42	....	474.	202.	272.	7.	17.4	8.2	9.2	.64	.672	.272	.4	....	....	....	.026	.15	11.2	0.	4.	......	191.000
1401	" 19	" 20	"	Little	.4	....	326.	218.	8.	11.5	9.4	7.4	2.	.76	.448	.24	.204	....	....	....	.026	.95	10.7	0.	12.	......	13.000
1433	" 26	" 27	"	Cons'd	.25	....	274.	222.	52.	9.5	8.8	6.8	2.	1.01	.44	.224	.216	....	....	....	.036	1.05	12.6	0.	13.	......	195.000
1456	Mar. 5	Mar. 7	"	Little	.4	....	273.	248.	25.	11.3	8.2	7.1	1.1	.76	.336	.208	.128	....	....	....	.024	1.7	11.	0.	11.	......	13.000
1492	" 12	" 13	"	Cons'd	.2	....	250.	207.	43.	10.9	8.3	6.9	1.4	.92	.352	.216	.136	....	....	....	.02	.6	15.8	0.	— 1.	......	60.000
1527	" 19	" 20	"	Much	.2	....	291.	146.	148.	3.6	11.7	5.6	6.1	.4	.416	.176	.24	....	....	....	.012	1.1	13.9	0.	1.	......	120.000
1562	" 26	" 27	"	Little	.3	....	224.	172.	52.	9.2	7.5	6.3	1.2	.44	.32	.208	.112	....	....	....	.012	1.15	16.9	0.	.3	......	260.000
1601	Apr. 2	Apr. 3	"	Cons'd	.4	....	286.	194.	92.	5.2	8.8	6.8	2.	.4	.42	.181	.236	....	....	....	.018	1.1	17.5	4.	3.	......	55.000
1641	" 9	" 10	"	Much	.4	....	286.	193.	93.	4.4	11.9	9.6	1.8	.34	.32	.24	.08	....	....	....	.024	.0	16.	4.	1.	......	30.000
1686	" 16	" 18	"	Little	.32	....	259.	217.	42.	7.	7.4	7.	.4	.34	.32	.288	.032	....	....	....	.054	.85	13.8	4.	2.	......	60.000
1720	" 23	" 24	"	"	.3	....	290.	258.	32.	7.6	8.4	7.3	1.1	.42	.424	.272	.152	....	....	....	.056	.8	13.	10.	10.	......	6,000
1764	" 30	May 2	Slight	"	.35	....	286.	241.	45.	9.8	8.	6.1	1.9	.42	.312	.24	.072	....	....	....	.054	.75	11.6	12.	11.	......	22.000
1785	May 7	" 8	Much	Cons'd	.4	....	318.	267.	51.	12.6	15.6	8.4	7.2	.5	.496	.288	.208	....	....	....	.03	.05	10.	11.	17.	......	3.400
1828	" 15	" 16	Decided	Little	.4	....	304.	270.	34.	14.	8.5	8.3	.2	.3	.312	.232	.08	....	....	....	.26	.6	9.8	22.	28.	......	1.200
1855	" 21	" 22	Much	"	.35	....	300.	248.	52.	14.	7.6	6.5	1.1	.44	.376	.224	.152	....	....	....	.08	1.1	9.	16.	19.	......	3.100
1899	" 28	" 29	"	Cons'd	.4	....	293.	242.	51.	13.4	7.6	5.6	2.	.46	.344	.176	.168	....	....	....	.1	.3	9.	20.	17.	......	3.500
1929	June 4	June 6	Decided	Little	.3	....	314.	282.	32.	12.8	7.	6.	1.	.76	.352	.256	.096	....	....	....	.26	.84	9.5	20.	17.	......	5.500
1965	" 11	" 12	Much	"	.3	....	301.	240.	61.	12.8	8.3	6.2	2.1	.38	.376	.2	.176	....	....	....	.16	.8	9.1	22.	24.	......	1,400
1999	" 18	" 19	"	"	.2	....	380.	272.	108.	19.	8.6	6.	2.6	1.28	.238	.208	.030	....	....	....	.32	.73	7.4	20.	23.	......	1.900
2031	" 25	" 26	"	Cons'd	.3	....	267.	244.	23.	16.2	7.9	7.2	.7	.264	.216	.16	.056	....	....	....	.8	.1	7.5	22.	28.	......	3,300
....	....	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	......	......	......	......	......	....

TABLE 134.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, AVERYVILLE.

Report of EDWIN O. JORDAN, University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1167	Jan. 2	Jan. 3	Distinct	V. Little	.22	....	366.	350.	16.	21.	6.6	6.5	.1	1.66	.352	.288	.064	....	....	....	.024	3.	28.1	1.	—2.	......	53.600
1208	" 9	" 10	Slight	"	.3	....	368.	358.	10.	24.	6.4	6.3	.1	1.92	.296	.264	.032	....	....	....	.03	3.4	28.3	2.	3.	......	9.100
1247	" 16	" 17	Distinct	"	.3	....	378.	360.	18.	49.	7.4	7.4	.0	2.56	.352	.26	.092	....	....	....	.07	.85	28.4	2.	3.	......	58,800
1275	" 23	" 24	Much	Cons'd	.3	....	356.	302.	54.	21.	8.	6.	2.	1.84	.416	.272	.144	....	....	....	.1	.45	31.	3.	4.	......	51,000
1312	" 29	" 31	"	Little	.32	....	310.	310.	0.	21.	6.5	6.2	.3	2.4	.44	.296	.144	....	....	....	.01	1.25	31.2	0.	—9.	......	117,000
1344	Feb. 6	Feb. 7	"	"	.27	....	296.	288.	8.	17.	6.	5.4	.6	1.48	.28	.184	.096	...	....	....	.024	.5	30.9	1.	—1.	......	48,000
1380	" 13	" 14	"	Much	.6	....	486.	182.	304.	7.	17.2	7.2	10.	.68	.736	.272	.464	....	....	....	.017	1.65	34.6	0.	—2.	......	210,000
1406	" 20	" 21	"	Cons'd	.4	....	338.	214.	124.	9.	9.1	7.2	1.9	.84	.44	.272	.168	....	....	....	.028	1.8	34.6	1.	0.	......	58,000
1437	" 27	" 28	"	"	.35	....	262.	218.	44.	10.5	8.8	7.2	1.6	.96	.352	.218	.104	....	....	....	.034	1.	35.6	0.	—3.	.....	175,000
1459	Mar. 7	Mar. 7	"	Little	.3	....	258.	228.	30.	9.4	7.6	6.2	1.4	.84	.28	.184	.096	....	....	....	.026	2.	34.7	0.	3.	......	22,000
1498	" 13	" 14	"	Much	.15	....	330.	166.	164.	8.8	9.	6.	3.	.68	.368	.12	.248	....	....	....	.026	1.1	38.9	1.	5.	......	77,000
1533	" 20	" 21	"	"	.18	....	294.	132.	162.	4.4	13.	5.9	7.1	.4	.488	.176	.312	....	....	....	.012	.6	43.02	1.	—3.	......	110,000
1570	" 27	" 28	"	Little	.22	....	210.	170.	40.	5.4	7.1	6.5	.9	.46	.296	.176	.12	....	....	....	.18	1.07	39.7	2.	3.	......	200,000
1608	Apr. 3	Apr. 4	"	Cons'd	.35	....	212.	182.	60.	4.8	8.	5.8	2.2	.46	.256	.16	.096	....	....	....	.016	1.1	40.1	6.	9.	......	33,000
1647	" 10	" 11	"	"	.35	....	274.	184.	90.	4.6	8.4	6.7	1.7	.32	.72	.384	.336	....	....	....	.026	1.85	29.2	9.	3.	... ..	23,000
1687	" 17	" 18	"	Little	.3	....	248.	210.	38.	7.4	7.7	7.2	.5	.42	.28	.224	.056	....	....	....	.054	1.1	36.85	10.	14.	......	9,000
1727	" 24	" 25	"	"	.25	....	262.	244.	18.	8	7.6	6.1	1.5	.2	.336	.208	.128	....	....	....	.048	1.	36.1	14.	18.	......	3,600
1765	May 1	May 2	"	"	.3	....	281.	262.	19.	10.	7.8	7.	.8	.176	.296	.192	.104	....	....	....	.054	.7	34.8	18.	23.	......	4,700
1795	" 8	" 9	Decided	"	.35	....	268.	264.	4.	10.4	8.8	7.6	1.2	......	......	......	......	....	....	....	.05	.5	33.3	19.	22.	......	6,700
1832	" 16	" 17	"	"	.4	....	300.	276.	24.	13.8	8.3	8.	.3	.28	.432	.176	.256	....	....	....	.088	1.2	32.75	22.	23.	......	24,500
1861	" 22	" 23	"	"	.4	....	290.	260.	30.	12.6	7.2	7.2	.0	.304	.296	.288	.008	....	....	....	.06	1.	32.1	19.	22.	......	3,000
1901	" 29	" 30	Much	"	.35	....	334.	252.	82.	12.	7.4	6.6	.8	.176	.344	.248	.096	....	....	....	.094	.45	31.9	21.	21.	......	4,800
1935	June 5	June 6	Decided	"	.25	....	266.	250.	16.	15.2	5.8	5.	.8	.4	.256	.168	.088	....	....	....	.16	.0	32.1	23.	21.	......	4,000
1969	" 12	" 13	"	"	.3	....	265.	251.	14.	13.6	7.	6.8	.2	.272	.304	.208	.096	....	....	.	.2	.9	31.8	23.	22.	......	8,600
2006	" 19	" 20	"	"	.2	....	339.	274.	65.	16.	7.5	6.8	.7	.12	.264	.24	.024	....	....	....	.21	1.16	30.6	22.	19.	... ..	800
2041	" 26	" 27	Distinct	"	.22	....	259.	250.	9.	16.6	5.9	5.8	.1	.52	.264	.114	.12	....	....	....	.03	.35	30.35	25.	24.	......	2,500
....	....	... ...	....	....	......	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	......	......	......	......	......	....

TABLE 135

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.

SOURCE OF WATER—ILLINOIS RIVER, WESLEY CITY.

University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1190	Jan. 5	Jan. 6	Decided	Little	.2	....	376.	376.	0.	22.	7.2	6.2	1.	1.68	.48	.24	.24	....	....	....	.032	.3	2.	—12.	.....	......	10.000
1222	" 11	" 12	Much	"	.22	....	371.	354.	17.	24.	7.5	6.6	.9	1.5	.46	.216	.244	....	....	....	.016	1.9	1.	1.	.....	......	50.000
1251	" 18	" 19	"	Much	Muddy	....	620.	290.	330.	18.	13.1	7.3	5.8	1.16	.7	.288	.412	....	....	....	.052	1.	2.	......	—1.	......	23.000
1345	Feb. 6	Feb. 7	"	Little	"	....	311.	304.	7.	14.	7.	6.2	.8	1.16	.38	.184	.196	....	....	....	.016	.85	4.	......	4.	......	47.000
1387	" 13	" 14	"	Much	"	....	521.	212.	309.	11.	12.2	6.4	5.8	1.	.66	.272	.388	....	....	....	.018	.75	7.	......	-7.	......	31.000
1411	" 21	" 23	"	Cons'd	.4	....	373.	215.	158.	9.	8.8	7.7	1.1	.76	.52	.224	.296	....	....	....	.031	1.85	7.8	......	0.	......	31.000
1460	Mar. 6	Mar. 7	"	Little	.3	....	256.	228.	28.	9.4	8.4	6.6	1.8	.82	.3	.192	.108	....	....	....	.026	1.65	7.	......	—4.	......	11.000
1501	" 14	" 15	"	Cons'd	.15	....	316.	220.	96.	9.9	10.6	6.2	4.4	.66	.41	.2	.24	....	....	....	.02	.7	12.	......	—1.	......	....
1534	" 20	" 22	"	Much	.18	....	274.	162.	112.	4.8	9.	6.	3.	.38	.34	.184	.156	....	....	....	.012	.85	13.6	......	—6.	.....	65,000
1581	" 29	" 30	"	Little	.3	....	232.	154.	78.	4.8	7.2	6.	1.2	.38	.28	.128	.152	....	....	....	.012	1.15	11.	......	4.	......	91,000
1610	Apr. 4	Apr. 5	"	"	.5	....	222.	199.	23.	5.2	7.7	6.5	1.2	.36	.256	.181	.072	....	....	....	.016	.5	12.	.....	4.5	......	29 000
1648	" 10	" 11	"	Cons'd	.4	....	284.	180.	101.	4.6	8.8	6.6	2.2	.44	.656	.416	.24	....	....	....	.018	1.85	......	6.	3.	......	17.000
1689	" 17	" 18	"	Little	.4	....	256.	198.	58.	8.6	17.9	4.9	13.	.304	.256	.192	.064	....	....	....	.028	1.35	9.	10.	18.	......	2.000
1728	" 24	" 25	Decided	"	.25	....	236.	230.	6.	7.6	7.3	6.5	.8	.168	.288	.208	.08	....	....	....	.048	1.3	8.4	13.	22.	......	7.000
1767	May 2	May 3	"	"	.35	....	326.	261.	65.	9.4	8.7	7.2	1.5	.176	.416	.192	.224	....	....	....	.031	1.05	7.	16.	21.	......	150.000
1796	" 8	" 9	Much	Cons'd	.4	....	460.	248.	212.	10.2	11.6	7.6	4.	......	......	......	......	....	....	....	.034	.5	6.	17.	23.	......	18.000
1829	" 15	" 16	Decided	Little	.4	....	292.	254.	38.	13.2	8.2	7.2	1.	.216	.368	.168	.2	....	....	....	.1	.45	5.2	20.	29.	......	40.000
1866	" 22	" 23	Much	"	.4	....	338.	276.	62.	13.	7.8	6.7	1.1	.312	.32	.296	.024	....	....	....	.08	1.2	1.1	17.	24.	......	6.100
1902	" 29	" 31	"	Much	.35	....	738.	234.	504.	11.	16.6	7.2	9.4	.288	.696	.248	.448	....	....	....	.064	1.1	5.	21.	28.	......	110.000
1938	June 6	June 7	"	Little	.3	....	324.	240.	84.	14.8	6.3	5.7	.6	.256	.264	.16	.104	....	....	....	.106	.4	4.5	24.	36.	......	3.000
1972	" 13	" 14	Decided	"	.3	....	304.	274.	30.	13.9	9.	7.	2.	.504	.864	.224	.64	....	....	....	.6	.2	4.	23.	26.	......	22.700
1973	" 13	" 14	Distinct	"	.3	....	303.	228.	75.	13.1	5.9	5.2	.7	.144	.248	.16	.088	....	....	....	.24	1.8	4.	23.	26.	......	....
1974	" 13	" 14	"	"	.3	....	300.	233.	67.	14.	6.8	6.3	.5	.168	.24	.176	.064	....	....	....	.16	1.5	4.	23.	26.	......	....
2008	" 20	" 20	Decided	"	.2	....	392.	276.	116.	16.4	7.4	6.3	1.1	.216	.272	.2	.072	....	....	....	.16	1.01	3.	24.	39.	......	10.000
2042	" 27	" 28	"	Cons'd	.25	....	278.	259.	19.	17.6	6.3	5.6	.7	.44	.264	.16	.104	....	....	....	.13	.65	3.1	24.	30.	......	1.400

TABLE 136.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN,
University of Chicago.

SOURCE OF WATER—ILLINOIS RIVER, PEKIN.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1223	Jan. 11	Jan. 12	Much	Little	.3	....	380.	340.	40.	25.	7.4	6.6	.8	1.64	.464	.304	.46	....	....	...	.046	2.1	1.	—4.	.....	......	70.000
1252	" 18	" 19	"	"	Muddy	....	614.	301.	313.	18.	13.8	7.2	6.6	1.04	.848	.344	.504	....	....	....	.052	1.15	2.	......	—4.	......	130.000
1288	" 25	" 26	"	Cons'd	.35	....	444.	320.	124.	22.	10.6	6.4	4.2	1.88	.712	.24	.472	....	....	....	.026	.75	4.	......	—12.	......	20.600
1313	" 30	" 31	"	Little	.32	....	312.	312.	0.	23.	6.8	6.1	.7	2.52	.376	.296	.08	....	....	....	.01	1.25	4.	......	—47.	......	68.600
1346	Feb. 6	Feb. 7	"	"	.3	....	310.	297.	13.	15.	7.5	5.2	2.3	1.4	.4	.168	.232	....	....	...	.017	.8	4.	......	4.	......	61.000
1382	" 13	" 14	"	Much	.3	....	509.	210.	299.	10.	13.6	6.5	7.1	.81	.581	.264	.32	....	....	....	.016	1.15	7.	......	— 7.	......	31.000
1412	" 21	" 23	"	Cons'd	.42	....	368.	216.	152.	8.	12.	7.5	4.5	.88	.461	.288	.176	....	....	....	.028	1.35	7.8	......	0.	......	41.000
1502	Mar. 14	Mar. 15	"	"	.12	....	316.	192.	154.	8.6	8.9	6.2	2.7	.68	.4	.184	.216	....	....	....	.012	1.1	12.	......	— 1.	......	28,000
1535	" 20	" 22	"	Much	.2	....	280.	118.	132.	4.6	9.	5.8	3.2	.32	.44	.136	.304	....	....	....	.61	.75	13.6	......	— 6.	......	34.000
1582	" 29	" 30	"	Little	.3	....	213.	151.	59.	5.2	7.8	6.5	1.3	.31	.232	.16	.072	....	....	....	.012	1.35	11	......	4.	......	85,000
1611	April 4	April 5	"	"	.4	....	221.	188.	36.	5.2	7.7	5.7	2.	.36	.221	.152	.072	....	....	....	.014	1.05	12.	......	1.	......	26.000
1649	" 10	" 11	"	Cons'd	.5	....	262.	181.	78.	5.1	8.4	6.5	1.9	.456	.784	.6	.184	....	....	....	.021	.8	......	5.5	3.	......	20.000
1688	" 17	" 18	"	Little	.4	....	218.	200.	18.	6.2	7.6	7.	.6	.301	.21	.192	.018	....	....	....	.054	.86	9.	10.	18.	......	17.000
1729	" 21	" 25	Decided	"	.3	......	251.	250.	4.	7.4	7.1	6.8	.6	.176	.272	.168	.101	....	....	....	.048	1.5	8.4	13.	22.	......	6.600
1768	May 2	May 3	"	"	.3	....	269.	256.	13.	9.2	8.	6.8	1.2	.12	.416	.192	.224	....	....	....	.021	1.15	7.	16.	21.	......	37,500
1797	" 9	" 9	Much	Cons'd	.4	....	436.	152.	284.	10.2	11.1	7.8	3.3	......	......	......	......	....	....	....	.014	.55	6.	17.	23.	......	14.000
1830	" 15	" 16	Decided	Little	.4	....	294.	251.	43.	13.	8.4	7.1	1.3	.208	.108	.218	.16	....	....	....	.1	1.	5.2	20.	29.	......	40,000
1867	" 22	" 23	Much	"	.35	....	302.	261.	41.	13.	7.7	7.1	.6	.312	.36	.272	.088	....	....	...	.08	.75	4.1	17.	21.	......	26.400
1903	" 29	" 31	"	Much	.3	....	708.	233.	475.	10.	15.8	7.1	8.7	.288	.61	.181	.456	....	....	....	.066	.7	5.	21.	28.	......	90.000
1939	June 6	June 7	"	Little	.22	....	367.	258.	109.	14.1	7.8	5.5	2.3	.384	.264	.208	.056	....	....	....	.14	.3	4.5	21.5	35.5	......	250,000
1975	" 13	" 14	Decided	"	.3	....	313.	248.	65.	14.2	6.8	6.2	.6	.24	.256	.224	.032	....	....	....	.22	1.05	4.	23.	25.5	......	190.000
2009	" 20	" 21	"	"	.2	....	330.	256.	74.	17.2	8.	6.4	1.6	.301	.376	.216	.160	....	....	....	.21	.69	3.	24.	39.	......	160.000
2043	" 27	" 28	"	Cons'd	.25	....	295.	239.	56.	17.8	7.	6.7	.3	.704	.28	2	.08	....	....	....	.13	.7	3.1	24.5	30.	......	110,000

TABLE 137.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN,
University of Chicago.

SOURCE OF WATER—ILLINOIS RIVER, HAVANA.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
	1900 Collection.	1900 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved.	By Suspd Matter.	Free Ammonia.	Albuminoid Am Tot'l	Albuminoid Am Dis-solv'd	Albuminoid Am Sus-pnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
1231	Jan. 11	Jan. 12	Slight	Little	.6	... .	355.	352.	3.	21.	6.2	5.	1.2	1.32	.344	.256	.088	....	....	....	.046	.5	4.06	0.	1.	......	27,600
1314	" 30	Feb. 2	Decided	"	.32	....	318.	306.	12.	21.	7.	6.1	.9	2.24	.18	.296	.184	....	....	....	.022	1.1	7.1	0.	—15.	......	63,000
1353	Feb. 7	" 8	Much	"	Muddy	....	314.	285.	59.	17.	7.6	6.	1 6	1.8	.424	.256	.168	....	....	....	.024	.45	7.4	1.	9.	......	46,600
1555	Mar. 22	Mar. 23	"	Much	.4	....	262.	131.	131.	6.	8.4	5.6	2.8	.464	.336	.168	.168	....	....	....	.008	.95	17.	3.	9.	......	60,000
1612	Apr. 4	Apr. 6	"	Little	.4	....	214.	180.	34.	4.6	7.3	5.8	1.5	.4	.192	.176	.016	....	....	....	.016	.6	14.9	6.	7.	......	50,000
1651	" 11	" 12	"	"	.5	....	256.	197.	59.	5.	6.4	6.	.4	.32	.488	.392	.096	....	....	....	.032	.05	14.3	9.	3.	......	4,700
1691	" 18	" 19	"	"	.2	....	272.	218.	54.	4.4	3.6	2.4	1.2	.168	.216	.136	.08	....	....	....	.031	1.1	12.9	11.	11.	......	4,000
1730	" 25	" 26	Decided	"	.3	....	234.	219.	15.	5.4	7.9	6.6	1.3	.144	.416	.208	.208	....	....	....	.044	.65	12.	11.5	18.	......	2,900
1769	May 2	May 3	"	"	.3	....	230.	212.	18.	7.6	8.6	6.7	1.9	.144	.464	.216	.248	....	....	....	.02	.8	11.2	20.	23.	......	1,100
1804	" 9	" 10	Much	"	.3	....	328.	253.	75.	9.2	8.	6.5	1.5	......	......	......	......	....	....	....	.02	.6	10.3	17.	17.	......	40,000
1838	" 16	" 17	Decided	"	.4	....	348.	262.	86.	13.	8.6	6.9	1.7	.408	.488	.248	.24	....	....	....	.062	.4	9.1	24.	26.	......	11,200
1874	" 23	" 24	Much	"	.3	....	376.	274.	102.	12.	8.5	7.4	1.1	.408	.328	.208	.12	....	....	....	.092	.51	9.	24.	27.	......	31,000
1904	" 31	" 31	"	"	.3	....	330.	268.	62.	12.	7.9	7.	.9	.341	.336	.192	.144	....	....	....	.04	.7	8.4	27.	32.	......	20,000
1936	June 6	June 7	"	Cons'd	.3	....	346.	268.	78.	12.2	7.5	5.7	1.8	.4	.344	.168	.176	....	....	....	.16	.04	8.4	24.	26.	......	19,000
1971	" 13	" 14	"	Little	.2	....	337.	252.	85.	11.8	7.1	6.5	.6	.288	.296	.168	.128	....	....	....	.24	.06	8.1	25.	33.	......	10,500
2010	" 20	" 21	"	"	.2	....	310.	244.	66.	14.	8.3	6.8	1.5	.344	.344	.208	.136	....	....	....	.13	.42	8.	26.	31.	......	7,400
2014	" 27	" 28	"	Cons'd	.25	....	293.	228.	65.	14.2	7.8	6.2	1.6	.36	.28	.2	.08	....	....	....	.14	.3	6.5	27.	25.	......	10,200

TABLE 138.

STREAMS EXAMINATION — CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—SANGAMON RIVER, CHANDLERVILLE.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dis-solv'd	Nitrogen as Ammonia. Albuminoid Am. Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1172	Jan. 3	Jan. 4	Decided	V. Little	.15	....	350.	348.	2.	5.3	4.4	3.9	.5	.142	.184	.136	.048	....	....	....	.016	2.65	3.	0.	3.5	......	900
1215	" 10	" 11	"	Little	.1	....	331.	290.	44.	6.4	2.6	2.4	.2	.168	.112	.088	.024	....	....	....	.008	1.9	3.5	1.	2.	......	4,000
1259	" 17	" 19	"	"	.3	....	306.	290.	16.	5.	2.8	1.8	1.	.192	.14	.088	.052	....	....	....	.008	.45	3.5	4.	7.	......	7,200
1276	" 24	" 25	"	"	.2	....	348.	297.	51.	5.8	4.	2.6	1.4	.228	.192	.128	.064	....	....	....	.014	.75	4.	5.	15.5	......	15,700
1315	" 31	Feb. 2	Slight	"	.12	....	332.	320.	12.	5.5	2.6	2.4	.2	.19	.112	.088	.024	....	....	....	.02	.8	4.	0.	15.	......	900
1355	Feb. 7	" 8	Much	"	.3	....	346.	288.	58.	5.3	4.8	3.6	1.2	.176	.216	.144	.072	....	....	....	.01	1.05	5.	2.	13.	......	29,300
1384	" 14	" 15	"	Much	.2	....	884.	180.	704.	3.	25.	5.7	19.3	.2	1.28	.16	1.12	....	....	....	.024	1.35	7.	0.	—4.	......	117,000
1438	Mar. 1	Mar. 2	"	Cons'd	.12	....	318.	230.	88.	4.	7.4	5.5	1.9	.144	.272	.128	.144	....	....	....	.018	1.3	6.	0.	1.	......	70,000
1470	" 7	" 8	"	"	.16	....	410.	226.	184.	4.2	8.2	3.5	4.7	.12	.28	.088	.192	....	....	....	.015	2.3	7.	1.	8.	......	45,000
1508	" 14	" 15	"	Much	.4	....	338.	138.	200.	4.	14.3	4.6	9.7	.126	.496	.101	.392	....	....	....	.012	1.15	16.	5.	4.	......	50,000
1544	" 21	" 22	"	"	.22	....	520.	186.	334.	3.8	15.8	5.6	10.2	.162	.96	.64	.32	....	....	....	.016	2.85	12.	5.	4.	......	120,000
1572	" 28	" 29	"	Little	.12	....	345.	251.	94.	3.8	6.	3.	3.	.06	.176	.088	.088	....	....	....	.017	2.6	8.	5.	6.	......	30,000
1613	Apr. 4	Apr. 6	"	"	.12	....	358.	276.	82.	3.8	4.3	2.2	2.1	.062	.128	.056	.072	....	....	....	.016	.95	8.	9.	11.	......	18,500
1652	" 11	" 12	Decided	"	.2	....	330.	282.	48.	5.2	4.4	2.8	1.6	.084	.176	.136	.04	....	....	....	.22	1.68	6.	9.	3.5	......	7,000
1692	" 18	" 19	Much	Cons'd	.4	....	347.	294.	53.	4.6	9.3	8.9	.4	.024	.144	.096	.048	....	....	....	.01	1.45	4.	16.	19.	......	5,600
1731	" 25	" 26	Decided	Little	.12	....	340	274.	66.	3.8	5.	3.5	1.5	.04	.224	.08	.144	....	....	....	.0	.75	4.	16.	25.	......	3,600
1770	May 2	May 3	"	"	.12	....	336.	265.	71.	4.8	4.2	2.7	1.5	.022	.184	.144	.04	....	....	....	.008	1.15	3.	18.	22.	......	1,900
1805	" 10	" 10	Much	Cons'd	.12	....	450.	266.	184.	5.4	6.9	4.3	2.6	......	......	......	......	....	....	....	.0	.6	3.	19.	22.	......	16,500
1839	" 16	" 17	Decided	Little	.2	....	370.	292.	78.	6.4	6.	4.6	1.4	.028	.288	.136	.152	....	....	....	.008	1.05	2.	25.5	31.	......	2,700
1875	" 23	" 24	Much	Cons'd	.3	....	468.	244.	224.	4.	8.5	5.	3.5	.042	.352	.12	.232	....	....	....	.04	1.35	3.	19.	22.	......	8,000
1911	" 30	" 31	"	"	.2	....	503.	285.	218.	5.6	8.5	3.6	4.9	.034	.328	.104	.224	....	....	....	.036	1.35	3.	25.5	27.	......	11,300
1945	June 6	June 7	"	"	.25	....	455.	253.	202.	4.6	8.3	3.4	4.9	.02	.344	.12	.224	....	....	....	.032	.55	4.	25.5	30.	......	12,000
1981	" 13	" 14	"	"	.25	....	414.	241.	173.	4.8	9.2	4.4	4.8	.022	.296	136	.16	....	....	....	.048	.75	5.	25.5	30.	......	8,300
2011	" 21	" 21	"	Little	.2	....	456.	257.	199.	3.8	8.3	4.	4.3	.012	.232	.12	.112	....	....	....	.024	1.5	3.	27.	24.	......	8,800
2051	" 27	" 28	"	"	.2	....	566.	238.	328.	6.	9.1	4.	5.1	.01	.288	.12	.168	....	....	....	.028	.65	3.	28.	30.	......	11,600

TABLE 139.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, BEARDSTOWN.

Report of EDWIN O. JORDAN, University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1181	Jan. 4	Jan. 5	Slight	V. Little	.23	....	392.	383.	9.	28.	6.8	4.6	2.2	2.8	.408	.32	.088	....	....	....	.046	2.	7.	0.	— 2.	......	10.700
1236	" 11	" 12	"	Little	.22	....	343.	342.	1.	17.	6.4	6.2	.2	1.4	.272	.272	.0	....	....	....	.03	.5	7.	0.	— 1.	......	....
1264	" 18	" 19	Much	Much	.2	....	512.	286.	226.	15.	8.5	5.6	2.9	1.16	.488	.184	.304	....	....	....	.26	.74	8.	0.	1.	......	....
1284	" 25	" 26	"	Cons'd	.3	....	527.	338.	189.	22.	8.8	6.2	2.6	2.2	.52	.256	.264	....	....	....	.044	1.	8.	0.	— 9.	......	25,300
1319	Feb. 1	Feb. 2	"	"	.25	....	354.	326.	28.	19.	7.4	5.8	1.6	2.16	.448	.248	.2	....	....	....	.024	1.15	7.8	0.	—15.5	......	....
1363	" 8	" 9	"	Much	.25	....	1276.	232.	1044.	11.	17.4	6.6	10.8	1.16	.864	.192	.672	....	....	....	.022	.7	9.2	0.	— 1.	......	68,000
1391	" 15	" 16	"	"	.5	....	788.	226.	562.	11.	16.7	6.4	10.3	.96	.736	.2	.536	....	....	....	.018	.05	10.4	0.	—15.5	......	42,400
1428	" 22	" 24	"	"	.4	....	894.	191.	703.	6.5	14.7	6.9	7.8	.7	.96	.216	.744	....	....	....	.012	1.15	11.2	0.	0.	......	58,000
1440	Mar. 1	Mar. 3	"	Cons'd	.5	....	406.	202.	4.	9.	8.2	6.8	1.4	.7	.456	.252	.224	....	....	....	.014	.4	9.8	0.	— 1.	......	37,500
1483	" 8	" 9	"	"	.15	....	394.	204.	190.	9.2	20.	7.	13.	.64	.376	.208	.168	....	....	....	.026	1.05	11.8	0.	— 3.	......	35,000
1513	" 15	" 16	"	Much	.4	....	434.	146.	288.	4.8	12.4	4.4	8.	.44	.592	.144	.448	....	....	....	.016	.5	16.8	0.	— 3.	......	34,000
1557	" 22	" 24	"	"	.2	....	320.	130.	190.	4.8	9.	5.	4.	.456	.4	.176	.224	....	....	....	.011	.55	17.4	0.	7.	......	23.000
1593	" 29	" 30	"	"	.4	....	256.	150.	106.	3.6	8.2	5.6	2.6	.3	.296	.136	.16	....	....	....	.011.	.95	15.9	1.	1.	......	70,000
1632	Apr. 5	Apr. 6	"	"	.4	....	388.	162.	226.	4.2	13.6	5.8	8.	.424	.336	.184	.152	....	....	....	.015	.75	14.7	1.	7.	......	20,000
1666	" 12	" 13	"	Cons'd	.4	....	280.	188.	92.	4.2	8.2	7.8	.4	.288	.44	.32	.12	....	....	....	.026	.75	14.7	1.	0.	......	7,700
1710	" 19	" 20	"	"	.4	....	322.	214.	108.	5.8	7.2	6.4	.8	.184	.296	.216	.08	....	....	....	.042	.05	12.8	9.	13.	......	12.300
1749	" 26	" 27	Decided	Much	.4	....	340.	237.	103.	8.	8.3	7.6	.7	.104	.4	.184	.216	....	....	....	.052	.16	12.15	10.	17.	......	7,400
1779	May 3	May 5	Much	Cons'd	.3	....	358.	262.	96.	9.	8.8	8.7	.1	.12	.418	.248	.2	....	....	....	.03	.65	11.	19.	8.	......	....
1813	" 10	" 11	"	Little	.3	....	390.	250.	140.	8.8	18.5	6.6	11.9	......	......	......	......	....	....	....	.03	.4	10.3	18.	8.	......	17,200
1848	" 16	" 18	Little	Much	.35	....	414.	251.	163.	11.4	18.8	7.	11.8	.216	.36	.24	.12	....	....	....	.01	.4	9.5	27.	20.	......	3,200
1887	" 23	" 25	"	Cons'd	.4	....	428.	278.	150.	10.8	8.7	6.9	1.8	.08	.312	.224	.088	...	....	....	.072	.9	9.5	25.5	20.	......	14.000
1919	" 30	June 1	Decided	"	.3	....	403.	268.	135.	11.8	8.2	5.9	2.3	.244	.328	.208	.12	....	....	....	.07	.45	9.1	28.	21.	......	7,000
1953	June 7	" 9	Much	"	.3	....	391.	375.	16.	11.	7.4	5.8	1.6	.104	.272	.176	.096	....	....	....	.086	.45	9.	27.	22.	......	17,000
1990	" 14	" 15	"	Little	.2	....	384.	236.	148.	10.4	8.8	5.5	3.3	.16	.416	.192	.224	....	....	....	.102	.5	8.8	24.5	18.	......	5,400
2024	" 21	" 22	"	"	.3	....	477.	372.	105.	9.2	7.9	6.	1.9	.142	.344	.256	.088	....	....	....	.17	.78	8.3	24.5	20.	......	3,000
2059	" 28	" 30	"	"	.25	....	506.	225.	281.	12.2	8.6	6.3	2.3	.138	.256	.192	.064	....	....	....	1.5	.35	7.9	24.5	27.	......	13,700

TABLE 140.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION. Report of EDWIN O. JORDAN,

SOURCE OF WATER—ILLINOIS RIVER, KAMPSVILLE. University of Chicago.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1171	Jan. 3	Jan. 4	Decided	V. Little	.2	....	379.	372.	7.	30.	6.9	6.9	.0	2.336	.4	.296	.104	....	....	....	.034	1.7	15.7	2.	— 2.	......	2,200
1216	" 10	" 11	Slight	"	.3	....	356.	328.	18.	22.	6.6	5.6	1.	1.6	.344	.256	.088	....	....	....	.032	1.5	15.8	......	......	......	18,600
1260	" 17	" 19	Decided	Little	.4	....	344.	238.	106.	14.	6.	5.2	.8	.72	.376	.218	.161	....	....	....	.034	1.15	15.9	3.	6.	......	10,000
1285	" 25	" 26	Much	Much	.35	....	400.	220.	180.	9.	10.2	6.	4.2	.91	.416	.192	.221	....	....	....	.026	1.1	16.6	4.	12.	......	200,000
1316	" 31	Feb. 2	"	Little	Muddy	....	366	312.	54.	18.	7.2	6.	1.2	1.64	.381	.224	.16	....	....	....	.026	1.7	16.2	0.	—13.	......	26,700
1354	Feb. 7	" 8	"	Cons'd	.25	....	455.	280.	175.	15.5	7.2	5.4	1.8	1.8	.151	.132	.216	....	....	....	.018	.25	16.4	......	......	......	17,200
1385	" 14	" 15	"	Much	.35	....	1242.	218.	1021.	8.1	23.5	7.8	15.7	608	1.2	.288	.912	....	....	....	.021	.55	17.5	1.	4.	......	76,000
1407	" 21	" 22	"	"	.2	....	790.	215.	575.	13.	16.1	6.	10.4	.586	.741	.168	.576	....	....	....	.01	.6	18.5	1.	4.	......	31,000
1512	Mar. 14	Mar. 16	"	"	.25	....	1002.	162.	840.	4.2	15.8	1.4	11.4	.311	.64	.12	.52	....	....	....	.012	.6	21.9	3.	2.	......	35,000
1538	" 21	" 22	"	"	.22	....	561.	151.	410.	5.4	11.6	5.	6.6	.216	.418	.148	.3	....	....	....	.012	1.35	24.16	1.5	— 2.	......	32,500
1573	" 28	" 29	"	Cons'd	.3	....	332.	146.	186.	4.8	8.	5.6	2.4	.311	.336	.176	.16	....	....	....	.01	.55	23.9	6.	12.	......	70,000
1611	Apr. 4	Apr. 6	"	"	.5	....	332.	143.	189.	3.6	7.9	5.4	2.5	.256	.221	.141	.08	....	....	....	.017	.5	22.2	8.	6.	......	38,000
1653	" 11	" 12	"	"	.35	....	337.	178.	159.	5.	8.7	5.6	3.1	.312	.288	.192	.096	....	....	...	.26	.8	21.8	9.	2.	......	1,800
1840	May 16	May 17	"	"	.3	....	442.	258.	181.	9.8	8.6	6.2	2.4	.168	.52	.181	.336	....	....	....	.03	.55	17.2	20.	22.	......	2,100
1876	" 23	" 24	"	Much	.3	....	520.	250.	270.	10.	9.2	7.2	2.	.16	.44	.192	.248	....	....	....	.01	.4	17.2	19.5	19.	......	5,000
1982	June 13	June 14	"	Cons'd	.3	....	420.	259.	161.	8.1	8.6	5.3	3.3	.012	.288	.168	.12	....	....	....	.072	.6	16.75	26.	30.	......	5,500
2017	" 22	" 22	"	"	.35	....	336.	222.	111.	9.8	7.6	6.1	1.5	.026	.264	.16	.101	....	....	....	.06	1.11	16.65	25.	30.	......	5,800
2052	" 27	" 29	"	"	.2	....	392.	215.	137.	13.	7.6	6.4	1.2	.062	.261	.168	.096	....	....	....	.075	65	16.45	29.	35.	......	......
....	....	....	....	....	......	......	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	......	......	......	......	......	......

TABLE 141.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, GRAFTON.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dis-solv'd	Albuminoid Am.: Sus-pud'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1187	Jan. 4	Jan. 5	Much	Little	.12	....	392.	368.	24.	28.5	6.7	5.9	.8	1.52	.384	.264	.12	....	....	....	.018	.2	2.9	0.	6.	......	2,600
1217	" 10	" 11	Slight	V. Little	.3	....	376.	370.	6.	25.	6.3	5.6	.7	2.16	.32	.256	.064	....	....	....	.024	8.5	4.2	0.	3.	......	3,300
1261	" 17	" 19	Much	Little	.2	....	350.	336.	14.	14.	6.	5.8	.2	.52	.288	.2048	.0832	....	....	....	.028	1.2	3.5	3.	13.	......	29,600
1286	" 24	" 26	"	Cons'd	.4	....	509.	220.	289.	7.6	10.7	5.8	4.9	.712	.52	.208	.312	....	....	....	.019	.9	5.1	4.	16.5	......	58,500
1317	" 31	Feb. 2	"	"	.3	....	478.	330.	148.	18.	8.2	5.6	2.6	1.64	.504	.192	.312	....	....	....	.03	1.4	2.8	0.	—9.	......	22,300
1356	Feb. 7	" 9	"	Little	.22	....	330.	296.	34.	16.	6.7	5.7	1.	1.52	.368	.256	.112	....	....	....	.014	.85	3.8	0.	13.	......	18,700
1386	" 14	" 15	"	Much	.35	....	1420.	192.	1228.	5.	23.	7.2	15.8	.46	1.408	.24	1.168	....	....	....	.024	.25	6.6	0.	2.	......	84,000
1408	" 21	" 22	"	"	.4	....	860.	233.	627.	8.	16.3	6.2	10.1	.56	.68	.192	.488	....	....	....	.016	.55	8.3	0.	5.5	......	16,000
1484	Mar. 7	Mar. 9	"	"	.14	....	1029.	148.	881.	6.4	15.6	5.6	10.	.394	.64	.216	.421	....	....	....	.012	.25	9.3	0.	2.	......	60,000
1509	" 14	" 16	"	"	.4	....	756.	200.	556.	4.2	14.4	3.4	11.	.3	.568	.176	.392	....	....	....	.012	.12	16.3	4.	4.	......	32,500
1536	" 21	" 22	"	"	.4	....	846.	156.	690.	5.6	15.8	4.6	11.2	.24	.672	.168	.501	....	....	....	.01	.9	14.8	0.	4.	......	59,000
1579	" 28	" 29	"	"	.2	....	572.	160.	412.	4.2	14.	5.2	8.8	.296	.424	.136	.288	....	....	....	.017	.9	12.7	3.	17.	......	56,000
1615	Apr. 4	Apr. 6	"	Cons'd	.3	....	426.	170.	256.	3.6	8.	4.8	3.2	.184	.28	.144	.136	....	....	....	.017	.3	11.8	4.	14.5	......	18,000
1654	" 11	" 12	"	"	.33	....	382.	174.	208.	4.8	8.6	5.5	3.1	.216	.288	.192	.096	....	....	....	.3	.8	13.1	9.	2.	......	4,000
1693	" 18	" 19	"	"	.12	....	365.	204.	161.	4.4	8.	6.3	1.7	.112	.304	.184	.12	....	....	....	.028	1.1	10.9	11.	13.	......	3,000
1732	" 25	" 26	Decided	"	.2	....	310.	218.	92.	4.8	7.4	5.5	1.9	.032	.256	.136	.12	....	....	....	.036	.7	12.7	15.	21.	......	3,300
1771	May 2	May 3	Much	Little	.3	....	314.	238.	76.	6.8	8.3	6.3	2.	.05	.34	.136	.204	....	....	....	.008	.55	18.7	20.	24.	......	600
1806	" 9	" 10	"	Cons'd	.3	....	398.	224.	174.	8.	7.6	6.	1.6	......	......	......	......	....	....	....	.016	.9	12.2	18.	21.	......	2,300
1841	" 16	" 17	"	"	.3	....	356.	258.	98.	10.	8.8	5.9	2.9	.012	.368	.24	.128	....	....	....	.028	.55	8.5	25.	30.	......	3,600
1877	" 23	" 24	"	"	.3	....	372.	258.	114.	9.6	8.	6.3	1.7	.066	.312	.208	.104	....	....	....	.032	.55	8.4	20.	27.	......	4,000
1912	" 30	" 31	"	"	.3	....	370.	278.	92.	11.4	7.1	5.9	1.2	.02	.24	.168	.072	....	....	....	.02	1.05	6.5	25.	27.	......	11,400
1946	June 6	June 8	"	Little	.25	....	360.	258.	102.	9.2	7.4	5.6	1.8	.02	.248	.176	.072	....	....	....	.008	.55	6.	26.	32.	......	5,300
1983	" 13	" 14	"	Cons'd	.3	....	332.	247.	85.	10.8	7.2	5.3	1.9	.03	.248	.176	.072	....	....	....	.002	.45	5.2	27.	31.	......	2,300
2018	" 22	" 22	"	Little	.35	....	274.	234.	40.	9.6	6.6	6.	.6	.012	.232	.16	.072	....	....	....	.017	1.3	5.2	27.	28.	......	11,500
2053	" 29	" 29	"	Cons'd	.2	....	410.	226.	104.	10.4	8.1	6.3	1.8	.04	.272	.216	.056	....	....	....	.04	.6	5.7	27.	29.	......	13,700

TABLE 142.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, GRAFTON.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1188	Jan. 4	Jan. 5	Much	Little	.25	....	......	......	......	6.27	8.6	8.2	.4	.104	.352	.208	.144	....	....	....	.0	.0	2.9	0.	6.	......	200
1218	" 10	" 11	"	"	.35	....	231.	198.	33.	4.67	9.	7.7	1.3	.032	.416	.176	.24	....	....	....	.0	.1	4.2	0.	3.	......	2,100
1262	" 17	" 19	"	"	.35	....	197.	192.	5.	3.8	8.6	7.4	1.2	.078	.416	.176	.24	....	....	....	....	......	3.5	3.	13.	......	8,900
1287	" 24	" 26	"	Much	.35	....	286.	176.	110.	4.	10.7	6.8	3.9	.18	.384	.128	.256	....	....	....	.002	.2	5.1	4.	17.	......	15,200
1318	" 31	Feb. 2	"	Little	.6	....	218.	220.	28.	4.	9.	7.8	1.2	.154	.32	.192	.128	....	....	....	.008	.6	2.8	0.	−9.	......	18,900
1357	Feb. 7	" 8	"	"	.42	....	262.	198.	64.	7.8	18.3	6.5	11.8	.08	.328	.144	.184	....	....	....	.006	.25	3.8	0.	13.	......	7,100
1387	" 11	" 15	"	Much	.35	....	540.	216.	324.	3.8	14.3	8.7	5.6	.08	.624	.252	.392	....	....	....	.014	.0	6.6	0.	2.	......	38,000
1409	" 21	" 22	"	"	.15	....	329.	180.	149.	3.3	15.4	8.6	6.8	.231	.56	.296	.264	....	....	....	.008	.55	8.3	0.	5.5	......	33,000
1485	Mar. 7	Mar. 9	"	"	.2	....	799.	112.	687.	3.	11.6	6.6	8.	.28	.616	.156	.48	....	....	....	.002	.05	9.3	0.	2.	......	60,000
1510	" 11	" 16	"	"	Muddy	....	1508.	158.	1350.	2.4	25.9	8.9	17.	.236	1.28	.216	1.064	....	....	....	.006	.45	16.3	4.	4.	......	80,000
1537	" 21	" 22	"	"	Muddy	....	540.	124.	416.	4.8	17.1	8.	9.1	.334	.904	.221	.68	....	....	....	.006	.1	14.	3.	4.	......	170,000
1580	" 28	" 29	"	"	.22	....	350.	121.	226.	3.2	12.4	7.2	5.2	.31	.488	.216	.272	....	....	....	.01	.75	12.7	4.	17.	......	60,000
1616	Apr. 4	Apr. 6	"	"	.35	....	370.	158.	212.	2.6	11.4	6.8	4.6	.346	.416	.168	.218	....	....	....	.011	.15	11.8	5.	14.5	......	140,000
1655	" 11	" 12	"	"	.5	....	738.	122.	616.	2.8	23.6	7.4	16.2	.11	1.12	.261	.856	....	....	....	.018	.6	13.1	8.	2.	......	28,000
1691	" 18	" 19	"	Cons'd	.3	....	274.	144	130.	2.6	8.	6.1	1.9	.088	.301	.12	.184	....	....	....	.018	.4	10.9	11.	13.	......	5,000
1733	" 25	" 26	"	Much	.3	....	810.	122	688.	1.6	19.7	6.6	13.1	.008	.96	.128	.832	....	....	....	.018	.65	12.7	15.	21.	......	40,200
1772	May 2	May 3	"	Little	.45	....	322.	139.	183.	2.2	11.9	7.2	1.7	.032	.32	.136	.184	....	....	....	.002	.2	10.7	19.	24.	......	4,500
1807	" 9	" 10	"	Cons'd	.8	....	338.	120.	218.	3.	16.1	13.3	2.8	......	......	......	......	....	....	....	.0	.0	12.2	19.	21.	......	3,800
1812	" 16	" 17	"	"	.5	....	358.	111.	247.	4.6	13.8	8.	5.6	.06	.52	.176	.344	....	....	....	.008	.1	8.5	23.	30.	......	2,100
1878	" 23	" 24	"	Much	.5	....	548.	129.	119.	2.2	8.8	6.7	2.1	.061	.52	.16	.36	....	....	....	.014	.25	8.4	19.	27.	......	13,500
1913	" 30	" 31	"	Cons'd	.35	....	280.	172.	108.	4.4	8.2	6.	2.2	.052	.28	.16	.12	....	....	....	.016	.25	6.5	24.	27.	......	8,700
1947	June 6	June 8	"	"	.4	....	300.	160.	140.	2.8	9.4	9.2	.2	.018	.336	.136	.2	....	....	....	.007	.95	6.	25.	32.	......	6,600
1984	" 13	" 14	"	Little	.4	....	232.	153.	79.	3.6	8.	6.5	1.5	.002	.218	.16	.088	....	....	....	.0	.0	5.2	26.	31.	......	12,000
2019	" 22	" 22	"	Cons'd	.3	....	240.	152.	88.	3.2	9.	7.4	1.6	.021	.256	.136	.12	....	....	....	.0	.35	5.2	26.	28.	......	2,400
2054	" 29	" 29	"	Much	.25	....	560.	147.	413.	3.4	11.6	6.3	8.3	.032	.56	.128	.432	....	....	....	.003	.3	5.7	27.	29.	......	4,000
....	....	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	......	......	......	......	......	....

TABLE 143.

STREAMS EXAMINATION — CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 FEET FROM ILLINOIS SHORE, ALTON.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Albuminoid Am.: Tot'l	Albuminoid Am.: Dissolv'd	Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1182	Jan. 4	Jan. 5	Much	Little	.22	....	332.	310.	22.	15.9	7.8	7.8	.0	.976	.312	.232	.08	....	....	....	.02	.15	0.	0.	4.	......	1,500
1210	" 10	" 11	"	Much	.3	....	286.	260.	26.	12.	8.	7.2	.8	.728	.4	.256	.144	....	....	....	.01	.55	2.4	0.	0.	......	3,800
1277	" 24	" 25	"	"	Muddy	....	440.	210.	230.	7.	10.8	5.8	5.	.48	.528	.208	.32	....	....	....	.013	.7	3.9	0.	10.	......	33,500
1321	Feb. 2	Feb. 3	"	Little	.3	....	328.	258.	70.	13.	8.3	8.	.3	.92	.272	.2	.072	....	....	....	.017	.05	0.	0.	0.	......	21,800
1348	" 7	" 8	"	"	Muddy	....	334.	242.	92.	12.	8.2	6.4	1.8	.816	.288	.184	.104	....	....	....	.009	.4	2.6	......	10.	......	17,000
1389	" 14	" 15	"	Much	.4	....	1494.	160.	1334.	4.6	24.	7.4	16.6	.28	1.456	.208	1.248	....	....	....	.008	.25	5.	......	10.	......	....
1419	" 22	" 23	"	"	.2	....	943.	190.	753.	6.1	17.3	6.6	10.7	.44	.824	.184	.64	....	....	....	.012	.7	5.	......	0.	......	85,000
1441	Mar. 2	Mar. 3	"	Cons'd	.22	....	359.	174.	185.	5.8	8.4	6.6	1.8	.384	.392	168	.224	....	....	....	.008	.3	3.4	......	0.	......	59,000
1465	" 9	" 10	"	Much	.18	....	1185.	177.	1008.	5.	18.2	5.4	12.8	.368	.656	.098	.56	....	....	....	.014	1.4	10.	0.	9.	......	100,000
1503	" 14	" 15	"	"	.12	....	1350.	132.	1218.	5.	16.	5.	11.	.28	.96	.104	.856	....	....	....	.018	1.4	17.	4.	6.	......	175,000
1539	" 21	" 22	"	"	.12	....	976.	139.	839.	4.4	12.7	5.	7.7	.256	.74	.16	.58	....	....	....	.008	.8	14.1	......	......	......	55,000
1574	" 28	" 29	"	"	Muddy	....	534.	160.	374.	4.6	14.2	5.6	8.6	.224	.456	.128	.328	....	....	....	.01	.7	11.5	6.	......	......	50,000
1617	Apr. 4	Apr. 6	"	"	.3	....	470.	170.	300.	3.4	8.	4.8	3.2	.192	.32	.128	.192	....	....	....	.016	.7	10.1	9.	10.	......	17,000
1667	" 12	" 13	"	"	.4	....	388.	171.	217.	4.2	8.5	5.2	3.3	.128	.44	.192	.248	....	....	....	.026	1.15	11.4	8.	5.	......	15,000
1695	" 18	" 19	"	"	.3	....	380.	196.	184.	4.6	8.8	5.6	3.2	.101	.272	.136	.136	....	....	....	.028	1.35	10.5	10.	10.	......	7,000
1734	" 25	" 26	Decided	Cons'd	.22	....	405.	192.	213.	4.8	8.9	5.8	3.1	.044	.352	.128	.224	....	....	....	.026	.11	11.9	15.	25.	......	18,000
1773	May 2	May 4	Much	"	.3	....	541.	231.	310.	0.8	10.8	5.8	5.	.036	.464	.136	.328	....	....	....	.022	1.	10.1	20.	23.	......	7,300
1799	" 9	" 10	"	"	.4	....	629.	196.	433.	7.2	12.3	6.5	5.8	.....	......	......	......	....	....	....	.018	.8	11.4	19.	16.	......	10,700
1833	" 16	" 17	"	"	.3	....	430.	252.	178.	8.	8.9	6.8	2.1	.004	.424	.192	.232	....	....	....	.024	.55	8.8	21.	29.	......	4,400
1868	" 23	" 24	"	Much	.25	....	502.	237.	265.	8.8	9.5	7.2	2.3	.01	.392	.192	.2	....	....	....	.024	.85	8.4	19.	21.	......	5,000
1905	" 30	" 31	"	Cons'd	.3	....	384.	224.	160.	7.2	8.4	6.4	2.	.006	.28	.176	.104	....	....	....	.02	.6	7.2	24.	25.	......	11,600
1940	June 6	June 7	"	"	.3	....	420.	224.	196.	7.2	8.7	5.9	2.8	.034	.32	.2	.12	....	....	....	.006	1.15	6.1	24.	26.	......	6,500
1976	" 13	" 14	"	Much	.3	....	730.	214.	516.	8.6	8.	6.	2.	.028	.568	.16	.408	....	....	....	.018	.5	5.2	24.	26.	......	13,500
2012	" 20	" 21	"	Little	.2	....	342.	220.	122.	8.	8.4	5.4	3.	.02	.264	.192	.072	....	....	....	.01	.85	5.3	23.	25.	......	3,600
2045	" 27	" 28	"	Much	.25	....	499.	172.	327.	6.6	10.8	5.8	5.	.034	.376	.16	.216	....	....	....	.034	.45	7.2	26.	29.	......	7,600

TABLE 144.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.

SOURCE OF WATER—MISSISSIPPI RIVER, ONE-FOURTH DISTANCE FROM ILLINOIS SHORE, ALTON.

University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1183	Jan. 1	Jan. 5	Much	Little	.25	....	268.	250.	18.	10.8	7.7	7.5	.2	.434	.336	.176	.16	....	....	....	.012	.1	0.	0.	4.	......	1,200
1214	" 10	" 11	"	Much	3	....	278.	242.	36.	11.4	8.	7.	1.	.672	.48	.288	.192	....	....	....	.008	.55	2.4	0.	0.	......	3,200
1278	" 24	" 25	"	"	Muddy	....	436.	198.	328.	6.2	10.6	5.6	5.	.424	.504	.181	.32	....	....	....	.012	.6	3.9	0.	10.	......	93,500
1322	Feb. 2	Feb. 3	"	Little	.3	....	328.	251.	77.	12.2	7.7	6.4	1.3	.888	.352	.2	.152	....	....	....	.018	.65	0.	0	0.	......	32,800
1349	" 7	" 8	"	"	1	....	320.	255.	65.	12.	8.2	6.4	1.8	.808	.304	.216	.088	....	....	....	.008	.85	2.6	11.	10.	......	41,000
1390	" 11	" 15	"	Much	.4	....	1082.	154.	928.	4.4	23.8	7.1	16.7	.492	1.12	.176	.944	....	....	....	.007	.1	5.	0.	0.	......	143,000
1420	" 21	" 23	"	"	5	....	759.	168.	591.	4.4	17.2	7.5	9.7	.36	.664	.224	.14	...	....	....	.012	.85	5.5	0.	0.	......	135,000
1432	Mar. 2	Mar. 5	"	Cons'd	.3	....	237	152.	85.	4.4	8.7	6.6	2.1	.336	.368	.192	.476	....	....	....	.002	.3	3.4	0.	0.	.....	51,000
1466	" 9	" 10	"	Much	.18	......	1180.	161.	1016.	4.8	17.5	5.9	11.6	.352	.056	.152	.504	....	....	....	.01	1.3	10.	0.	9.	......	90,000
1501	" 14	" 15	"	"	.12	....	1100.	128.	1272.	4.6	16.2	5.9	10.3	.272	1.008	.12	.888	....	....	...	.008	.45	17.	4.	6.	......	110,000
1540	" 21	" 22	"	"	.12	....	750	112.	638.	3.8	16.9	6.2	10.7	.288	1.02	.208	.812	....	....	...	.006	.8	14.1	......	......	......	150,000
1575	" 28	" 29	"	"	.15	.....	478.	131.	344.	4.	14.5	5.4	9.1	.304	.456	.128	.328	....	....	....	.01	1.1	11.5	6.	.....	......	110,000
1618	Apr. 4	Apr. 6	"	"	.3	.....	430	160.	270.	3.4	8.7	5.2	3.5	.492	.28	.16	.12	....	....	....	.016	.85	10.1	9.	10.	......	35,000
1668	" 12	" 13	"	"	.1	....	477.	138.	339.	2.8	11.9	6.3	8.6	.112	.64	.208	.432	....	....	....	.02	1.45	11.4	8.	5.	......	67,000
1696	" 18	" 19	"	"	.22	....	322.	178.	144.	3.6	8.4	5.4	3.	.08	.272	.136	.136	....	....	....	.03	1.2	10.5	10.	10.	......	15,000
1735	" 25	" 26	"	"	.3	....	698.	150.	548.	2.	18.6	6.2	12.6	.06	.81	.176	.664	....	....	....	.022	.65	11.9	15.	25.	......	38,000
1774	May 2	May 4	"	Cons'd	.3	....	370.	142.	228.	3.	11.	6.9	4.1	.028	.44	.12	.32	....	....	....	.008	.75	10.1	20.	23.	......	13,500
1800	" 9	" 10	"	"	.5	....	468.	130.	338.	4.6	16.	9.	7.	......	......	.....	.....	....	....	....	.014	.55	11.4	19.	16.	......	4,600
1834	" 16	" 17	"	"	.45	....	370.	196.	174.	5.8	9.4	8.1	1.3	.034	.44	.176	.261	....	....	....	.024	.3	8.8	21.	29.	......	4,600
1869	" 23	" 24	"	Much	.35	....	492.	170.	322.	4.8	11.9	7.5	7.1	.014	.108	.184	.224	....	....	..	.016	.45	8.4	19.	21.	......	5,700
1906	" 30	" 31	"	"	.3	....	372.	200.	172.	6.	8.3	6.2	2.4	.006	.296	.16	.136	....	....	....	.01	.8	7.2	24.	25.	......	8,000
1911	June 6	June 7	"	Cons'd	.3	....	401.	194.	207.	5.4	9.1	6.4	2.7	.032	.341	.136	.208	....	....	....	004	.55	6.1	21.	26.	......	7,200
1977	" 13	" 11	"	Much	.35	....	601.	207.	397.	8.2	8.6	6.6	2.	.012	.352	.16	.192	....	....	....	.011	.5	5.2	24.	26.	......	10,000
2013	" 20	" 21	"	Little	.2	....	331.	207	127.	6.	8.8	5.6	3.2	.052	.280	136	.144	....	....	....	.0	.4	5.3	23.	25.	......	3,800
2046	" 27	" 28	"	Much	.35	....	519.	166.	353.	6.	9.6	5.7	3.9	.044	.376	144	.232	....	....	....	.026	15	7.2	26.	29.	......	4,000

TABLE 145.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, ALTON.

University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1184	Jan. 4	Jan. 5	Much	Little	.21	....	268.	266.	2.	13.7	7.8	6.9	.9	·53	.296	.2	.096	....	....	....	.016	.025	......	0.	4.	......	2,100
1212	" 10	" 11	"	Much	.3	....	263.	234.	29.	8.8	8.4	7.6	.8	.44	.352	.24	.112	....	....	....	.006	.05	2.4	0	0.	......	8.300
1279	" 24	" 25	"	"	.3	....	404.	199.	205.	5.6	9.	6.2	2.8	.168	.384	.176	.208	....	....	....	.008	.55	3.9	0.	10.	......	67.000
1323	Feb. 2	Feb. 3	"	Little	.4	....	318.	232.	86.	11.	8.	6.5	1.5	.738	.328	.208	.12	....	....	....	.018	.85	0.	0.	0.	......	18.300
1350	" 7	" 8	"	"	.4	....	296.	238.	58.	13.	10.2	6.8	3.4	.72	.272	.192	.08	....	....	....	.009	.3	2.6	11.	10.	......	11.000
1391	" 14	" 15	"	Much	.4	....	1356.	156.	1200.	4.4	23.7	6.8	16.9	.227	1.312	.168	1.144	....	....	....	.007	1.15	5.	0.	0.	......	111,000
1421	" 21	" 23	"	"	.5	....	514.	166.	318.	3.	16.5	8.3	8.2	.304	.568	.28	.288	....	....	....	.012	.5	5.	0.	0.	......	61.000
1443	Mar. 2	Mar. 3	"	Cons'd	.35	....	263.	170.	93.	4.4	8.7	7.6	1.1	.216	.296	.192	.104	....	....	....	.0	.3	3.4	0.	0.	......	19,000
1467	" 9	" 10	"	Much	.18	....	1146.	141.	1005.	3.6	17.2	5.7	11.5	.272	.656	.112	.544	....	....	....	.01	1.	10.	0.	9.	......	67.000
1505	" 14	" 15	"	"	.25	....	1460.	112.	1318.	4.2	19.3	5.8	13.5	.272	1.08	.176	.904	....	....	....	.008	.6	17.	4.	6.	......	240.000
1541	" 21	" 22	"	"	.2	....	550.	102.	448.	3.6	17.4	7.2	10.2	.376	1 2	.216	.984	....	....	....	.005	.6	14.1	......	......	......	250.000
1576	" 28	" 29	"	"	.3	....	366.	116.	250.	3.2	15.8	7.2	8.6	.304	.52	.216	.304	....	....	....	.01	.55	11.5	6.	......	......	175.000
1619	Apr. 4	Apr. 6	"	"	.3	....	350.	150.	200.	2.6	8.6	6.	2.6	.248	.4	.152	.248	....	....	....	.01	.05	10.1	9.	10.	......	103.000
1669	" 12	" 13	"	"	.5	....	586.	106.	480.	1.6	17.5	7.8	9.7	.13	.856	.432	.424	....	....	....	.026	.6	11.4	8.	5.	......	28,000
1697	" 18	" 19	"	"	.3	....	282.	140.	142.	2.6	8.4	6.	2.4	.084	.272	.136	.136	....	....	....	.026	.55	10.5	10.	10.	......	27,000
1736	" 25	" 26	"	"	.3	....	880.	136.	744.	1.8	19.4	6.5	12.9	.084	.92	.176	.744	....	....	....	.018	.5	11.9	15.	25.	......	61,000
1775	May 2	May 4	"	Cons'd	.4	....	316.	132.	184.	3.	11.6	7.	4.6	.032	.36	.128	.232	....	....	....	.008	.5	10.1	20.	23.	......	10,500
1801	" 9	" 10	Decided	"	.7	....	356.	120.	236.	2.4	17.7	12.6	5.1	......	......	......	.....	....	....	....	.0	.3	11.4	19.	16.	......	3.900
1835	" 16	" 17	Much	"	.6	....	365.	142.	223.	2.6	14.4	8.3	6.1	.032	.464	.192	.272	....	....	....	.016	.0	8.8	24.	29.	......	6.200
1870	" 23	" 24	"	Much	.4	....	566.	132.	434.	2.4	16.2	7.9	8.3	.038	.488	.16	.328	....	....	....	.016	.4	8.4	19.	21.	......	5.200
1907	" 30	" 31	"	"	.3	....	297.	164.	133.	5.2	8.8	6.	2.8	.006	.28	.152	.128	....	....	....	.008	.55	7.2	24.	25.	......	2.400
1942	June 6	June 7	"	Cons'd	.3	....	360.	172.	188.	4.	15.8	6.4	9.4	.05	.344	.136	.208	....	....	....	.006	.5	6.1	24.	26.	......	7.100
1978	" 13	" 14	"	Much	.4	....	320.	186.	134.	6.6	7.4	6.2	1.2	.016	.288	.16	.128	....	....	....	.002	.55	5.2	24.	26.	......	3.300
2014	" 20	" 21	"	Little	.2	....	286.	178.	108.	4.6	8.5	6.	2.5	.046	272	.16	.112	....	....	....	.007	.3	5.3	23.	25.	.....	4.000
2047	" 27	" 28	"	Much	.25	....	530.	164.	366.	4.6	14.6	6.8	7.8	.028	.456	.136	.32	....	....	....	.019	.45	7.2	26.	28.	......	13,900

TABLE 146.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, ONE-FOURTH DISTANCE FROM MISSOURI SHORE, ALTON.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Albuminoid Am: Dissolv'd	Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1185	Jan. 4	Jan. 5	Much	Little	.2	....	302.	290.	12.	15.9	7.6	6.9	.7	.914	.36	.192	.168	....	....	....	.02	.0	......	0.	4.	......	3,500
1213	" 10	" 11	"	Much	.35	....	241.	198.	46.	6.2	8.8	8.	.8	.208	.325	.192	.133	....	....	....	.004	.025	2.4	0.	0.	......	4,500
1280	" 24	" 25	"	"	.3	....	350.	192.	158.	4.	8.6	6.2	2.4	.104	.424	.176	.248	....	....	....	.002	.55	3.9	0.	10.	......	30,200
1321	Feb. 2	Feb. 3	"	Little	.4	....	307.	238.	69.	11.1	8.	6.6	1.4	.656	.352	.184	.168	....	....	....	.016	.5	0.	0.	0.	......	37,500
1351	" 7	" 8	"	"	.4	....	270.	213.	57.	8.	8.2	7.2	1.	.376	.32	.232	.088	....	....	....	.006	.2	2.6	11.	10.	......	9,000
1392	" 14	" 15	"	Much	.4	....	754.	168.	586.	3.8	18.	7.4	10.6	.12	1.016	.192	.824	....	....	....	.007	.2	5.	0.	0.	......	112,000
1422	" 22	" 23	"	"	.5	....	620.	151.	466.	3.6	16.6	8.4	8.2	.28	.624	.224	.4	....	....	....	.01	.25	5.5	0.	0.	......	68,000
1444	Mar. 2	Mar. 3	"	Cons'd	.4	....	223.	142.	81.	4.1	8.6	7.5	1.1	.216	.344	.224	.12	....	....	....	.0	.3	3.4	0.	0.	......	15,000
1468	" 9	" 10	"	Much	.18	....	1042.	111.	931.	1.7	17.2	5.4	11.8	.16	.656	.112	.544	....	....	....	.006	1.	10.	0.	9.	......	75,000
1506	" 14	" 15	"	"	.3	....	1618.	74.	1544.	3.8	19.4	5.2	14.2	.221	1.216	.136	1.08	....	....	....	.008	.9	17.	4.	6.	......	250,000
1542	" 21	" 22	"	"	.2	....	608.	111.	494.	3.4	18.2	7.3	10.9	.376	1.26	.296	.964	....	....	....	.008	.55	14.1	......	......	......	180,000
1577	" 28	" 29	"	"	.2	....	381.	116.	265.	3.1	15.8	7.2	8.6	.216	.536	.216	.32	....	....	....	.001	.6	11.5	6.	......	......	260,000
1620	Apr. 4	Apr. 6	"	"	.3	....	380.	160.	220.	3.8	9.2	5.9	3.3	.192	.416	.152	.264	....	....	....	.01	.1	10.1	9.	10.	......	130,000
1670	" 12	" 13	"	"	.43	....	662.	135.	527.	1.6	19.3	7.2	12.1	.188	.901	.208	.696	....	....	....	.026	.6	11.4	8.	5.	......	60,000
1698	" 18	" 19	"	"	.35	....	302.	134.	168.	2.6	8.8	6.	2.8	.076	.32	.136	.184	....	....	....	.028	.25	10.5	10.	10.	......	20,000
1737	" 25	" 26	"	"	.25	....	914.	133.	781.	2.2	18.9	6.5	12.4	.082	.92	.168	.752	....	....	....	.016	.5	11.9	15.	25.	......	62,000
1776	May 2	May 4	"	Cons'd	.4	....	315.	167.	178.	3.	9.5	6.7	2.8	.012	.301	.136	.168	....	....	....	.009	.5	10.1	20.	23.	......	7,200
1802	" 9	" 10	"	"	.7	....	552.	112.	440.	3.6	16.5	10.8	5.7	......	......	......	......	....	....	....	.002	.35	11.4	19.	16.	......	10,000
1836	" 16	" 17	"	"	.6	....	450.	124.	226.	4.4	15.4	8.	7.4	.031	.512	.192	.32	....	....	....	.014	.15	8.8	21.	29.	......	5,700
1871	" 23	" 24	"	Much	.4	....	631.	122.	512.	1.4	16.7	7.2	9.5	.05	.512	.128	.384	....	....	....	.016	.3	8.4	19.	21.	......	7,500
1908	" 30	" 31	"	"	.35	....	296.	156.	140.	5.2	8.5	6.	2.5	.018	.288	.12	.168	....	....	....	.009	.55	7.2	24.	25.	......	2,600
1913	June 6	June 7	"	Cons'd	.3	....	332.	154.	178.	3.2	16.2	6.6	9.6	.032	.344	.168	.176	....	....	....	.006	.7	6.1	24.	26.	......	5,000
1979	" 13	" 14	"	Much	.4	....	256.	158.	98.	4.8	7.4	6.7	.7	.016	.296	.144	.152	....	....	....	.002	.35	5.2	21.	26.	......	4,100
2015	" 21	" 21	"	Little	.2	....	258.	157.	101.	3.4	8.6	6.1	2.5	.032	.320	.136	.184	....	....	....	.0	.025	5.3	23.	25.	......	2,600
2018	" 27	" 28	"	Much	.2	....	572.	116.	426.	3.2	14.	6.6	7.1	.052	.48	.128	.352	....	....	....	.019	.45	7.2	26.	28.	......	20,000

TABLE 147.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 FEET FROM MISSOURI SHORE, ALTON.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1186	Jan. 4	Jan. 5	Much	Little	.25	....	216.	246.	20.	12.2	7.5	6.9	.6	.362	.304	.160	.144	....	....	....	.006	.00	......	0.	4.	......	3,400
1214	" 10	" 11	"	Much	.35	....	227.	188.	39.	5.4	8.9	7.4	1.5	.064	.325	.176	.149	....	....	....	.0	.025	2.4	0.	0.	......	6,600
1281	" 24	" 25	"	"	.3	....	345.	190.	155.	3.8	10.8	6.4	4.4	.054	.368	.176	.192	....	....	....	.004	.5	3.9	0.	10.	......	31,300
1325	Feb. 2	Feb. 3	"	Little	.6	....	282.	220.	62.	10.6	7.8	6.6	1.2	.568	.301	.2	.104	....	....	....	.016	.7	0.	0.	0.	......	21,200
1352	" 7	" 8	"	"	.4	....	260.	213.	47.	8.	7.9	6.6	1.3	.32	.36	.208	.152	....	....	....	.006	.2	2.6	11.	10.	......	14,000
1393	" 14	" 15	"	Much	.4	....	644.	160.	484.	3.8	17.2	7.3	9.9	.136	.72	.216	.504	....	....	....	.007	.15	5.	0.	0.	......	125,000
1423	" 22	" 23	"	"	.5	....	426.	168.	258.	3.9	16.3	8.5	7.8	.24	.72	.216	.504	....	....	....	.012	.25	5.5	0.	0.	......	70,000
1445	Mar. 2	Mar. 3	"	Cons'd	.4	....	294.	154.	140.	4.2	8.3	7.2	1.1	.216	.272	.224	.018	....	....	....	.0	.3	3.4	0.	0.	......	10,000
1469	" 9	" 10	"	Much	.18	....	940.	117.	823.	2.4	17.1	5.2	11.9	.136	.656	.088	.568	....	....	....	.006	1.	10.	0.	9.	......	116,000
1507	" 14	" 15	"	"	.3	....	1463.	70.	1393.	2.6	18.6	5.4	13.2	.208	1.08	.136	.944	....	....	....	.007	.75	17.	4.	6.	......	....
1543	" 21	" 22	"	"	.2	....	628.	108.	520.	4.4	17.8	8.4	9.4	.384	.78	.304	.476	....	....	....	.008	.2	14.1	......	......	......	120.000
1578	" 28	" 29	"	"	.22	....	492.	136.	356.	3.2	16.6	7.	9.6	.314	.544	.216	.328	....	....	....	.012	.5	11.5	6.	......	......	120,000
1621	Apr. 4	Apr. 6	"	"	.3	....	400.	146.	254.	3.8	9.4	5.9	3.5	.192	.4	.176	.224	....	....	....	.014	.4	10.1	9.	10.	......	106.000
1671	" 13	" 13	"	"	.4	....	677.	130.	517.	2.2	19.3	5.7	13.6	.114	.856	.192	.664	....	....	....	.026	.85	11.4	8.	5.	......	143.000
1699	" 18	" 19	"	"	.35	....	320.	134.	186.	2.8	8.8	6.1	2.7	.086	.272	.16	.112	....	....	....	.028	.15	10.5	10.	10.	......	43,000
1738	" 25	" 26	"	"	.25	....	900.	134.	766.	2.2	19.	6.3	12.7	.028	.92	.176	.744	....	....	....	.01	.5	11.9	15.	25.	......	34,000
1777	May 2	May 4	"	Cons'd	.4	....	480.	158.	322.	3.4	14.1	8.2	5.9	.022	.488	.176	.312	....	....	....	.009	.5	10.1	20.	23.	......	16,000
1803	" 9	" 10	"	"	.7	....	600.	116.	484.	3.4	17.2	11.8	5.4	.....	......	......	......	....	....	....	.004	.35	11.4	19.	16.	......	10,700
1837	" 16	" 17	"	"	.6	....	344.	132.	212.	4.2	13.4	8.1	5.3	.028	.36	.264	.096	....	....	....	.014	.15	8.8	24.	29.	......	1,800
1872	" 23	" 24	"	Much	.4	....	622.	120.	502.	2.2	16.7	6.8	9.9	.05	.568	.16	.408	....	....	....	.016	.3	8.4	19.	21.	......	4,500
1909	" 30	" 31	"	"	.35	....	291.	164.	127.	5.	6.8	6.3	.5	.14	.28	.144	.136	....	....	....	.009	.55	7.2	24.	25.	......	4,700
1914	June 6	June 7	"	Cons'd	.3	....	334.	148.	186.	3.4	15.8	6.6	9.2	.034	.344	.136	.208	....	....	....	.016	.4	6.1	24.	26.	......	7,000
1980	" 13	" 14	"	Much	.4	....	228.	158.	70.	4.8	8.2	6.8	1.4	.024	.296	.128	.168	....	....	....	.001	.2	5.2	24.	26.	......	2,000
2016	" 20	" 21	"	Little	.2	....	256.	162.	94.	3.4	8.6	6.	2.6	.018	.256	.16	.096	....	....	....	.0	.0	5.3	23.	25.	......	3,000
2049	" 27	" 28	"	Much	.2	....	494.	145.	349.	3.4	13.8	7.3	6.5	.03	.408	.104	.304	....	....	....	.024	.35	7.2	26.	29.	......	5,800

TABLE 148.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN.
University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 FEET FROM ILLINOIS SHORE, AT CHAIN OF ROCKS. PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1192	Jan. 5	Jan. 6	Much	Little	.2	....	301.	292.	12.	15.	8.6	7.4	1.2	.696	.44	.232	.208	....	....	....	.017	.85	2.2	0.	4.5	......	3,000
1224	" 11	" 12	"	Cons'd	.35	....	294.	240.	51.	10.	7.6	7.2	.4	.464	.44	.2	.24	....	....	....	.016	.55	3.	0.	4.	......	2,800
1267	" 26	" 27	"	Much	Muddy	....	406.	216.	190.	6.3	11.8	7.6	4.2	.31	.38	.136	.244	....	....	....	.024	.85	5.6	1.	—1.	......	21,400
1359	Feb. 8	Feb. 9	"	"	.22	....	1518.	216.	1302.	9.8	18.3	5.9	12.4	576	.98	.144	.836	....	....	....	.008	.4	2.7	2.	—4.	......	76,000
1424	" 23	" 22	"	"	.4	....	1449.	180.	1269.	6.2	18.7	9.	9.7	.392	1.16	.224	.936	....	....	....	.018	1.15	8.	0.	4.5	......	76,000
1472	Mar. 8	Mar. 9	"	"	.16	....	1632.	152.	1480.	5.	18.9	5.2	13.7	.262	.82	.128	.692	....	....	....	.008	.5	15.	1.	10.	......	150,000
1545	" 22	" 22	"	"	.22	....	880.	140.	740.	4.6	17.2	4.8	12.4	.274	.68	.152	.528	....	....	....	.008	1.1	18.8	2.	13.	......	160,000
1583	" 29	" 30	"	"	.18	....	612	142.	470.	4.4	9.2	5.	4.2	.316	.38	.128	.252	....	....	....	.012	.85	15.	5.	7.	......	80,000
1622	Apr. 5	Apr. 6	"	"	.3	....	460.	155.	305.	4.	8.8	5.2	3.6	.192	.352	.136	.216	....	....	....	.017	.85	14.2	7.	17.	......	23,000
1656	" 12	" 13	"	"	.35	....	450.	162.	288.	4.4	11.8	5.6	6.2	.208	.392	.184	.208	....	....	....	.03	1.15	15.8	7.	2.	......	17,000
1700	" 19	" 20	"	Cons'd	.3	....	333.	176.	157.	4.2	8.3	5.6	2.7	.096	.264	.16	.154	....	....	....	.03	.85	15.8	12.	22.	......	7,000
1739	" 26	" 27	"	Much	.25	....	486.	178.	308.	4.	15.	6.2	8.8	.012	.496	.176	.32	....	....	....	.042	.01	17.2	15.	21.	......	21,000
1808	May 10	May 11	"	"	6	....	506.	172.	331.	5.6	15.9	8.5	7.4	......	......	......	......	....	....	....	.012	.3	16.3	17.	18.	......	9,500
1843	" 17	" 18	"	"	.3	....	1165.	221.	944.	9.4	17.3	7.	10.3	.06	.72	.144	.576	....	....	....	.012	.5	15.	22.	23.	......	10,300
1883	" 24	" 25	"	Little	.3	....	704.	200.	504	5.8	11.4	5.9	8.5	.002	.464	.264	.2	....	....	....	.02	.7	14.2	20.	27.	......	9,900
1915	" 31	June 1	"	Much	.3	....	1156.	231.	1222.	9.	9.6	4.8	4.8	028	.576	.136	.44	....	....	....	.006	.25	13.2	23.	22.	......	9,100
1948	June 7	" 8	"	"	.3	....	962.	220.	712.	7.6	11.1	5.8	8.6	.02	.536	.176	.36	....	....	....	.006	.15	12.4	25.	24.	......	6,900
1985	" 14	" 14	"	"	.3	....	2593.	210.	2383.	7.6	18.	6.1	11.9	.022	.96	.088	.872	....	....	....	.008	.35	10.7	24.	27.	......	16,600
2020	" 21	" 22	"	"	.3	....	906.	203.	706.	6.6	13.	6.6	6.4	.014	.442	.096	.346	....	....	....	.005	.0	11.2	25.	27.	......	8,500
2055	" 28	" 29	"	"	.35	....	1235.	276.	1059.	4.6	17.	5.5	11.5	.048	.656	.136	.520	....	....	....	.003	.35	13.9	26.	32.	......	15,600
....	....	....	....	....	......	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	......	......	......	......	......	....

TABLE 149.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Report of EDWIN O. JORDAN, University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am. Tot'l	Nitrogen as Ammonia: Albuminoid Am. Dissolv'd	Nitrogen as Ammonia: Albuminoid Am. Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
1193	Jan. 5	Jan. 6	Much	Little	.12	....	376.	340.	36.	21.	6.2	4.4	1.8	.264	.28	.136	.144	....	....	....	.009	.35	2.2	0.	4.5	......	1.800
1225	" 11	" 12	"	Cons'd	.3	....	456.	320.	36.	22.	5.2	4.4	.8	.096	.42	.128	.292	....	....	....	.006	.2	3.	0.	1.	......	1.600
1298	" 26	" 27	"	Much	.22	....	654.	311.	313.	19.2	7.8	4.2	3.6	.07	.38	.088	.292	....	....	....	.012	.2	5.6	1.	—1.	......	72,500
1360	Feb. 8	Feb. 9	"	"	.22	....	1678.	242.	1436.	10.	17.8	5.1	12.7	.552	1.02	.144	.876	....	....	....	.006	.4	2.7	1.	—4.	......	54,000
1425	" 23	" 24	"	"	.4	....	984.	202.	782.	9.	16.5	6.6	9.9	.232	.72	.136	.584	....	....	....	.008	1.15	8.	0.	4.5	......	110,000
1473	Mar. 8	Mar. 9	"	"	.16	....	2626.	146.	2480.	5.4	20.	4.6	15.4	.17	1.	.061	.936	....	....	....	.006	.1	15.	1.	10.	......	140.000
1546	" 22	" 23	"	"	.22	....	739.	114.	625.	3.8	17.6	6.3	11.3	.28	.68	.2	.48	....	....	....	.008	.6	18.8	2.	13.	......	130,000
1589	" 29	" 30	"	"	.18	....	440.	132.	308.	3.6	9.4	5.8	3.6	.31	.48	.128	.352	....	....	....	.008	.4	15.	5.	7.	......	115,000
1623	April 5	April 6	"	"	.3	....	590.	158.	432.	4.4	14.4	5.9	8.5	.248	.56	.192	.368	....	....	....	.015	.65	14.2	7	17.	......	54,000
1657	" 12	" 13	"	"	.4	....	750.	132.	618.	3.8	18.8	7.5	11.3	.192	.92	.261	.656	....	....	....	.03	.6	15.8	7.	2.	......	108.000
1701	" 19	" 20	"	"	.3	....	958.	196.	762.	5.	15.6	5.	10.6	.08	.464	.128	.336	....	....	....	.018	.5	15.8	12.	22.	......	8,000
1740	" 26	" 27	"	"	.3	....	887.	140.	747.	3.2	19.	6.3	12.7	.028	.8	.136	.664	....	....	....	.026	.01	17.2	15.	24.	......	43.000
1809	May 10	May 11	"	"	.5	....	826.	162.	664.	6.	17.5	8.9	8.6	......	......	......	......	....	....	....	.008	.4	16.3	17.	18.	......	14,600
1844	" 17	" 18	"	"	.3	....	1350.	212.	1138.	9.8	18.	7.	11.	.032	.904	.16	.744	....	....	....	.008	.4	15.	22.	23.	......	11,700
1884	" 24	" 25	"	"	.3	....	1478.	208.	1270.	6.4	17.7	6.8	10.9	.046	.856	.12	.736	....	....	....	.008	.7	14.2	20.	27.	......	12,500
1916	" 31	June 1	"	"	.3	....	1855.	249.	1606.	9.8	10.	4.8	5.2	.042	.624	.112	.512	....	....	....	.004	.25	13.2	23.	22.	......	16.200
1949	June 7	" 8	"	"	.3	....	1336.	294.	1042.	8.6	12.8	5.2	7.6	.018	.56	.176	.384	....	....	....	.003	.15	12.4	25.	24.	......	8,300
1986	" 14	" 15	"	"	.3	....	3746.	220.	3526.	8.	19.8	4.3	15.5	.056	1.08	.088	.992	....	....	....	.002	.35	10.7	24.	27.	......	8.800
2021	" 21	" 22	"	"	.3	....	1526.	222.	1304.	7.4	14.3	5.	9.3	.006	.544	.112	.432	....	....	....	.004	.4	11.2	25.	27.	......	13.200
2056	" 28	" 29	"	"	.3	....	2123.	179.	1944.	6.6	18.	5.4	12.6	.016	.96	.112	.848	....	....	....	.003	.45	13.9	26.	32.	......	9.500
....	....	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	......	......	......	......	......	....

TABLE 150

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN,
University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, AT CHAIN OF ROCKS, INLET TOWER, ST. LOUIS WATER WORKS.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1194	Jan. 5	Jan. 6	Much	Little	.1	....	391.	355.	39.	22.	5.	4.	1.	.192	.3	.112	.188	....	....	....	.004	.15	2.2	0.	4.5	......	1,800
1226	" 11	" 12	"	Cons'd	.3	....	528.	313.	185.	26.	5.	3.6	1.4	.08	.36	.104	.256	....	....	....	.006	.5	3.	0.	1.	......	2,600
1299	" 26	" 27	"	Much	.2	....	745.	316.	429.	19.6	7.6	3.8	3.8	.068	.34	.064	.276	....	....	....	.012	.2	5.6	1.	-1.	......	70,000
1361	Feb. 8	Feb. 9	"	"	.22	....	1927.	265.	1662.	13.	17.4	4.3	13.1	.32	1.	.128	.872	....	....	....	.006	.25	2.7	1.	-1.	......	63,000
1126	" 23	" 24	"	"	.3	....	1006.	232.	771.	12.2	15.	6.	9.	.158	.72	.128	.592	....	....	....	.008	.85	8.	0.	4.5	......	15,000
1471	Mar. 8	Mar. 9	"	"	.16	....	3050.	140.	2910.	5.4	20.4	4.4	16.	.148	1.08	.08	1.	....	....	....	.008	.4	15.	1.	10.	......	90,000
1547	" 22	" 23	"	"	Muddy	....	1110.	147.	963.	6.	18.5	7.	11.5	.3	1.04	.2	.84	....	....	....	.014	.6	18.8	2.	13.	......	135,000
1585	" 29	" 30	"	"	.18	....	564.	136.	428.	4.8	9.	6.2	2.8	.288	.52	.136	.384	....	....	....	.01	.5	15.	5.	7.	......	88,000
1624	Apr. 5	Apr. 6	"	"	Muddy	....	830.	200.	630.	6.8	14.6	5.9	8.7	.196	.52	.152	.368	....	....	....	.015	.35	14.2	7.	17.	......	56,000
1658	" 12	" 13	"	"	.35	....	1040.	190.	850.	6.	17.7	6.6	11.1	.138	.818	.181	.664	....	....	....	.028	.55	15.8	7.	2.	......	72,000
1702	" 19	" 20	"	"	.25	....	1344.	196.	1148.	5.8	9.2	4.7	4.5	.032	.536	.112	.424	....	....	....	.02	.4	15.8	12.	22.	......	18,000
1741	" 26	" 27	"	"	.25	....	1310.	186.	1121.	5.1	17.2	5.5	11.7	.052	.688	.136	.552	....	....	....	.006	.01	17.2	15.	24.	......	....
1810	May 10	May 11	"	"	.3	....	1210.	196.	1014.	8.4	18.7	7.1	11.6	......	......	.....	......	....	....	....	.0	.4	16.3	17.	18.	......	15,000
1845	" 17	" 18	"	"	.3	....	2018.	212.	1776.	12.	19.3	7.	12.3	.032	1.04	.12	.92	....	....	....	.002	.4	15.	22.	23.	......	18,600
1885	" 24	" 25	"	"	.3	....	2035.	218.	1787.	8.8	19	8.5	10.5	.046	1.016	.128	.888	....	....	....	.012	.75	14.2	20.	27.	......	13,800
1917	" 31	June 1	"	"	.3	....	2256.	267.	1989.	10.	10.2	4.3	5.9	.024	.648	.168	.48	....	....	....	.005	.15	13.2	23.	22.	......	12,000
1950	June 7	" 8	"	"	.3	....	2054.	247.	1807.	11.4	13.4	4.5	8.9	.028	.696	.12	.576	....	....	....	.005	.15	12.4	25.	21.	......	12,000
1987	" 14	" 15	"	"	.2	....	4198.	229.	3969.	8.2	22.	4.8	17.2	.062	.128	.112	.016	....	....	....	.002	.35	10.7	24.	27.	......	15,600
2022	" 21	" 22	"	"	.35	....	2144.	228.	1916.	8.2	15.2	5.5	9.7	.021	.68	.08	.6	....	....	....	.003	.....	11.2	25.	27.	......	17,900
2057	" 28	" 29	"	"	.32	....	2756.	175.	2581.	6.6	19.8	4.7	15.1	.016	1.12	.112	1.008	....	....	....	.002	.35	13.9	26.	32.	......	9,000
....	....	....	....	....	....	....	......	....	......	......	....	....	....	......	......	......	......	....	....	....	....	......	......	......	......	......	....

TABLE 151.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 FEET FROM MISSOURI SHORE, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1195	Jan. 5	Jan. 6	Much	Little	.3	....	1396.	360.	36.	15.	4.3	3.9	.4	.128	.26	.096	.164	....	....	....	.004	.2	2.2	0.	4.5	......	2.800
1227	" 11	" 12	"	Cons'd	.3	....	524.	358.	166.	30.	4.9	2.9	2.	.104	.24	.096	.144	....	....	....	.006	......	3.	0.	1.	......	12,700
1300	" 26	" 27	"	Much	.2	....	788.	354.	434.	24.2	7.	2.8	4.2	.062	.22	.08	.14	....	....	....	.012	.45	5.6	1.	—1.	......	88,000
1362	Feb. 8	Feb. 9	"	"	.22	....	1278.	284.	994.	14.4	15.5	3.3	12.2	.252	.54	.128	.412	....	....	....	.005	.45	2.7	1.	—4.	......	32,000
1427	" 23	" 24	"	"	.2	....	1092.	310.	782.	18.8	7.8	4.6	3.2	.106	.44	.144	.296	....	....	....	.008	.6	8.	0.	6.	......	16,000
1475	Mar. 8	Mar. 9	"	"	.16	....	4122.	145.	3977.	6.	20.6	4.	16.6	.156	1.44	.064	1.376	....	....	....	.008	.5	15.	1.	10.	......	156,000
1548	" 22	" 23	"	"	.2	....	2970.	182.	2788.	9.4	19.6	4.6	15.	.186	1.2	.096	1.104	....	....	....	.016	1.	18.8	2.	13.	......	270,000
1586	" 29	" 30	"	"	.18	....	1026.	131.	895.	12.	13.2	4.6	8.6	.142	.568	.184	.384	....	....	....	.024	.5	15.	5.	7.	......	140,000
1625	Apr. 5	Apr. 6	"	"	.2	....	1634.	310.	1324.	13.4	12.8	2.7	10.1	.056	.672	.096	.576	....	....	....	.017	.4	14.2	7.	17.	......	65,000
1659	" 12	" 13	"	"	.22	....	1858.	301.	1557.	8.2	13.3	4.4	8.9	.034	.672	.104	.568	....	....	....	.016	.5	15.8	7.	2.	......	36,000
1703	" 19	" 20	"	"	.2	....	2008.	252.	1756.	8.	18.2	3.9	14.3	.022	.624	.088	.536	....	....	....	.017	.4	15.8	12.	22.	......	23.000
1742	" 26	" 27	"	"	.15	....	1724.	230.	1494.	8.2	16.1	4.7	11.4	.058	.608	.12	.488	....	....	....	.014	.3	17.2	15.	24.	......	44.000
1811	May 10	May 11	"	"	.2	....	1882.	272.	1610.	13.8	19.3	4.3	15.	......	......	......	......	....	....	....	.0	.85	16.3	17.	18.	......	21,000
1846	" 17	" 18	"	"	.3	....	2600.	302.	2298.	16.2	19.9	4.4	15.5	.032	1.24	.088	1.152	....	....	....	.002	.4	15.	22.	23.	......	14.300
1886	" 24	" 25	"	"	.3	....	2516.	290.	2226.	10.2	19.6	3.9	15.7	.036	1.12	.128	.992	....	....	....	.001	.7	14.2	20.	27.	......	9.500
1918	" 31	June 1	"	"	.3	....	2558.	294.	2264.	11.8	17.7	9.8	13.9	.008	.856	.072	.784	....	....	....	.005	.15	13.2	23.	22.	......	8,200
1951	June 7	" 8	"	"	.3	....	2227.	279.	1948.	10.8	3.9	4.7	5.2	.014	.69	.12	.57	....	....	....	.004	.15	12.4	25.	24.	......	6.400
1988	" 14	" 15	"	"	.2	....	4032.	220.	3812.	8.5	23.4	4.5	18.9	.064	.128	.096	.032	....	....	....	.002	.35	10.7	24.	27.	......	30,500
2023	" 21	" 22	"	"	.3	....	2462.	240.	2222.	8.8	14.	5.3	8.7	.014	.720	.112	.608	....	....	....	.003	.2	11.2	25.	27.	......	7,900
2058	" 28	" 29	"	"	.3	....	3429.	183.	3246.	7.6	20.4	5.5	14.9	.056	1.344	.112	1.232	....	....	....	.001	.6	15.9	26.	32.	......	11,400
....	....	....	....	....	......	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	......	......	......	......	......	....

TABLE 152

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSOURI RIVER, FORT BELLEFONTAINE, WEST ALTON, MO.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
1189	Jan. 4	Jan. 5	Much	Little	.0	....	448.	388.	60.	24.	2.8	1.8	1	.112	.184	.072	.112	....	....	....	.002	.0	1.7	1.	3.	......	600
1235	" 11	" 12	"	"	.12	....	620.	384.	236.	16.	4.2	2.4	1.8	.078	.136	.088	.018	....	....	....	.002	.55	3.3	2.	5.	......	5,100
1263	" 18	" 19	"	Much	.12	....	814.	404.	410.	35.	6.4	3.2	3.2	.146	.28	.096	.184	....	....	....	.0	.3	4.1	1.	6.	......	2,600
1295	" 25	" 26	"	"	.2	....	887.	351.	536.	26.	5.1	1.8	3.3	.088	.256	.032	.224	....	....	....	.007	.6	5.1	2.	3.	......	102,000
1320	Feb. 1	Feb. 3	"	Cons'd	.2	....	542.	391.	148.	26.5	3.4	2.5	.9	.096	.192	.08	.112	....	....	....	.006	.35	2.8	1.	5.	......	13,300
1358	" 7	" 10	"	Little	.12	....	638.	356.	282.	20.	3.4	1.7	1.7	.088	.84	.018	.792	....	....	....	.001	.2	2.	7.	12.	......	2,000
1388	" 11	" 16	"	Much	.2	....	882.	300.	582.	25.	14.	2.4	11.6	.052	.384	.01	.344	....	....	....	.012	.0	3.4	2.	5.	......	38,000
1410	" 21	" 23	"	Little	.12	....	542.	336.	206.	23.	4.2	3.2	1.	.052	.16	.088	.072	....	....	....	.006	.55	2.7	2.	9.	......	2,000
1439	Mar. 1	Mar. 2	"	Cons'd	.2	....	757.	350.	407.	22.	5.8	3.2	2.6	.014	.216	.072	.144	....	....	....	.008	.5	5.9	1.	4.	......	14,000
1471	" 7	" 8	"	Much	.11	....	......	......	......	7.5	30.	3.8	26.2	.132	1.52	.061	1.456	....	....	....	....	.85	13.3	2.	5.	......	80,000
1499	" 13	" 14	"	"	.15	....	3938.	162.	3776.	9.7	28.6	1.3	24.3	.216	1.384	.128	1.256	....	....	....	.01	.9	16.5	5.	13.	......	173,000
1556	" 22	" 23	"	"	.11	....	1845.	182.	1663.	8.6	18.8	5.2	13.6	.12	1.12	.208	.912	....	....	....	.016	.85	10.9	8	16.	......	90,000
1594	" 29	" 30	"	"	.4	....	1078.	254.	821.	12.	9.6	5.2	4.4	.034	.528	.152	.376	....	...	....	.018	.8	7.9	11.	9.	......	150,000
1609	Apr. 3	Apr. 4	"	"	.2	....	1826.	276.	1550.	13.4	9.8	3.	6.8	.052	.536	.088	.448	....	....	....	.026	.5	9.2	12.	17.	......	170,000
1650	" 10	" 11	"	"	.25	....	1760.	311.	1446.	13.2	16.3	3.2	13.1	......	.96	.511	.416	....	....	....	.012	.35	9.3	11.	6.	......	40,000
1690	" 16	" 18	"	"	.4	....	3248.	300.	2918.	8.8	16.8	6.1	10.1	.056	.96	.088	.872	....	....	....	.01	.55	12.5	12.	18.	......	11,000
1721	" 23	" 25	"	"	.22	....	1922.	234.	1688.	8.4	11.8	4.2	10.6	.012	1.016	.08	.936	....	....	....	.016	.0	10.6	......	......	......	26,000
1766	May 1	May 2	"	"	.2	....	1880.	230.	1650.	14.6	18.6	1.2	11.4	.034	.96	.166	.791	....	....	....	.0	.7	11.	20.	25.	......	30,000
1798	" 8	" 9	"	"	.3	....	2328.	238.	2090.	10.6	19.9	3.9	16.	.....	......	......	......	....	....	....	.0	.7	10.8	21.	26.	......	24,000
1831	" 15	" 16	"	"	25	....	3110.	313.	2797.	11.	19.2	5.	14.2	.024	1.2	.088	1.112	....	....	....	.0	.55	11.8	23.	27.	......	13,600
1865	" 22	" 23	"	"	.3	....	1758.	300.	1458.	12.6	18.7	3.8	14.9	.022	1.36	.128	1.232	....	....	....	.002	1.	11.2	21.	26.	......	26,000
1910	" 29	" 31	"	"	.2	....	2115.	298.	2117.	13.8	17.7	1.7	13.	.042	.8	.104	.696	....	....	....	.0	1.4	11.6	24.	27.	......	9,000
1937	June 5	June 7	"	"	25	....	2313.	279.	2034.	12.2	17.5	3.8	13.7	.026	.8	.072	.728	....	....	....	.004	.8	10.8	25.	26.	......	10,000
1970	" 12	" 13	"	"	.2	....	2095.	256.	1839.	10.2	16.	3.8	12.2	.021	.736	.08	.656	....	....	....	.0	.3	10.4	25.	21.	......	5,400
2007	" 19	" 20	"	"	2	....	2535.	236.	2299.	9.2	19.2	5.7	13.5	.052	.8	.08	.72	....	....	....	.0	.5	11.	26.	21.	......	24,000
2050	" 27	" 28	"	"	15	....	3716.	198.	3518.	8.4	20.6	4.5	16.1	.02	1.52	.08	1.44	....	....	....	.004	.65	12.9	25.	26.	......	25,000

TABLE 153.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 YARDS FROM ILLINOIS SHORE, JEFFERSON BARRACKS, MO.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dis-solved.	Residue on Evaporation: Sus-pended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dis-solved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Am'monia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dis-solv'd	Nitrogen as Ammonia: Albuminoid Am.: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dis-solved.	Organic Nitrogen: Sus-pended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1176	Jan. 4	Jan. 5	Much	Little	.18	....	362.	330.	32.	18.6	7.2	6.1	1.1	.056	.304	.192	.112	....	....	....	.014	.3	1.	0.	......	......	800
1229	" 11	" 12	"	Cons'd	.4	....	286.	250.	36.	9.	8.2	8.2	.0	.352	.400	.264	.136	....	....	....	.006	2.55	2.5	0.	......	......	4,300
1251	" 18	" 19	"	Little	.3	....	292.	236.	56.	8.	8.6	6.6	2.	.004	.544	.176	.368	....	....	....	.008	.3	2.6	3.	......	......	6,600
1290	" 25	" 26	"	Much	Muddy	....	464.	194.	270.	5.8	11.	6.4	4.6	.296	.496	.176	.32	....	....	....	.012	.4	5.9	4.	......	......	40,000
1329	Feb. 3	Feb. 5	"	Little	.2	....	321.	285.	39.	16.	7.	5.6	1.4	.6	.248	.184	.064	....	....	....	.012	.35	6.	0.	......	......	8,400
1365	" 9	" 10	"	Much	.25	....	1536.	206.	1330.	9.8	19.5	5.8	13.7	.64	1.2	.168	1.032	....	....	....	.008	.45	4.7	0.	......	......	102,000
1414	" 22	" 23	"	"	.5	....	873.	176.	697.	5.4	12.7	6.9	5.8	.44	.9	.208	.692	....	....	....	.012	1.15	6.4	0.	......	......	39,000
1449	Mar. 3	Mar. 5	"	Cons'd	.45	....	314.	194.	120.	7.2	9.2	6.6	2.6	.384	.32	.208	.112	....	....	....	.016	.9	6.2	0.	......	......	90,000
1477	" 8	" 9	"	Much	.2	....	1328.	160.	1168.	5.6	19.6	5.6	14.	.19	.96	.064	.896	....	....	....	.016	.4	14.	0.	......	......	125,000
1515	" 16	" 17	"	"	.3	....	1292.	163.	1129.	4.	18.8	5.8	13.	.254	1.12	.136	.984	....	....	....	.006	1.	25.5	2.	......	......	190,000
1550	" 22	" 22	"	"	.2	....	915.	114.	801.	4.4	17.8	6.	11.8	.26	.74	.128	.612	....	....	....	.008	.8	18.5	2.	......	......	210,000
1588	" 29	" 30	"	"	.3	....	692.	158.	534.	4.4	12.8	5.5	7.3	.288	.504	.34	.164	....	....	....	.014	.7	13.	8.	......	......	120,000
1627	Apr. 5	Apr. 6	"	"	.3	....	494.	146.	348.	4.2	9.3	5.2	4.1	.184	.424	.136	.288	....	....	....	.017	1.	14.8	7.	......	......	29,000
1661	" 12	" 15	"	"	.45	....	604.	166.	438.	3.	16.	6.4	9.6	.164	.624	.168	.456	....	....	....	.03	1.1	15.8	8.	......	......	46,000
1705	" 20	" 20	"	"	.4	....	508.	159.	349.	4.6	8.8	6.2	2.6	.048	.392	.144	.248	....	....	....	.03	.0	16.	12.	......	......	7,000
1744	" 26	" 27	"	"	.25	....	687.	164.	523.	4.8	15.6	6.2	9.4	.058	.624	.16	.464	....	....	....	.03	.85	17.4	16.	......	......	32,000

TABLE 154.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN,
University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER. EAST OF MIDSTREAM, JEFFERSON BARRACKS, MO.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1177	Jan. 4	Jan. 5	Much	Little	.12	....	344.	336.	8.	19.4	6.9	5.4	1.5	.618	.36	.16	.2	....	....	....	.012	.3	1.	0.	......	......	2,900
1230	" 11	" 12	"	Cons'd	.25	....	330.	226.	104.	9.	7.4	6.2	1.2	.32	.38	.224	.156	....	....	....	.006	.25	2.5	0.	......	......	1.000
1255	" 18	" 19	"	Little	.32	....	326.	230.	96.	9.	8.8	7.	1.8	.018	.44	.16	.28	....	....	....	.002	.2	2.6	3.	......	......	18,000
1291	" 25	" 26	"	Much	.3	....	171.	222.	249.	7.1	10.6	6.	4.6	.196	.46	.128	.332	....	....	....	.008	.85	5.9	4.	......	......	16.400
1330	Feb. 3	Feb. 5	"	Little	.2	....	396.	296.	100.	15.5	6.8	5.	1.8	.592	.64	.144	.196	....	....	....	.012	.85	6.	0.	......	......	11.600
1360	" 9	" 9	"	Much	.25	....	1180.	208.	972.	9.8	18.7	6.2	12.5	52	1.072	.192	.88	....	....	....	.004	.25	4.7	0.	......	......	56,000
1415	" 22	" 25	"	"	.3	....	841.	188.	656.	5.6	17.8	6.4	11.4	.116	.84	.176	.664	....	....	....	.012	1.15	6.4	0.	......	......	80,000
1450	Mar. 3	Mar. 5	"	Cons'd	.35	....	289.	180.	109.	5.8	9.6	7.3	2.3	.323	.456	.168	.288	....	....	....	.016	.4	6.2	0.	......	......	70,000
1478	" 8	" 9	"	Much	.15	....	1920.	119.	1801.	6.2	20.	5.6	14.4	.186	1.08	.064	1.016	....	....	....	.016	.35	14.	0.	......	......	112,000
1516	" 16	" 17	"	"	.3	....	1634.	136.	1198.	3.4	18.7	6.4	12.3	.254	1.32	.152	1.168	....	....	....	.01	1.	23.5	2.	......	......	180.000
1551	" 22	" 22	"	"	.2	....	850.	120.	730.	3.8	17.7	5.7	12.	.252	.74	.184	.556	....	....	....	.014	.8	18.5	2.	......	......	170,000
1589	" 29	" 30	"	"	.3	....	574.	142.	432.	4.4	12.1	5.	7.4	.31	.416	.38	.036	....	....	....	.012	.8	13.	8.	......	......	115,000
1628	Apr. 5	Apr. 6	"	"	.3	....	436.	150.	286.	3.8	9.	5.9	3.1	.176	.328	.114	.184	....	....	....	.015	1.	14.8	7.	......	......	23.000
1662	" 12	" 13	"	"	.38	....	517.	110.	407.	3.4	15.6	6.2	9.4	.2	.592	.152	.44	....	....	....	.032	.9	15.8	8.	......	......	29,000
1706	" 20	" 21	"	"	.4	....	640.	170.	470.	4.6	8.9	6.3	2.6	.018	.418	.168	.28	....	....	....	.028	.0	16.	12.	......	......	9,000
1745	" 26	" 27	"	"	.25	....	779.	160.	619.	4.6	17.9	6.2	11.7	.064	.618	.168	.48	....	....	....	.038	.5	17.4	16.	......	......	29.000

TABLE 155.

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, JEFFERSON BARRACKS, MO.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am.: Tot'l	Nitrogen as Ammonia: Albuminoid Am.: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am.: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1178	Jan. 4	Jan. 5	Much	Little	.12	....	403.	339.	64.	21.4	6.4	4.4	2.	.052	.26	.168	.092	....	....	....	.011	.2	1.	0.	......	......	4,200
1231	" 11	" 12	"	Cons'd	.4	....	362.	252.	110.	10.	8.2	7.2	1.	.376	.32	.176	.144	....	....	....	.006	.35	2.5	0.	......	......	3,500
1256	" 18	" 19	"	"	.5	....	418.	256.	162.	12.	8.4	5.8	2.6	.088	.46	.136	.324	....	....	....	.002	.45	2.6	3.	......	......	32,900
1292	" 25	" 26	"	Much	.3	....	569.	251.	318.	12.4	8.2	4.7	3.5	.108	.46	.128	.332	....	....	....	.008	.6	5.9	4.	......	......	40,000
1331	Feb. 3	Feb. 5	"	Little	.2	....	402.	280.	122.	17.	6.8	4.8	2.	.544	.22	.152	.068	....	....	....	.006	.3	6.	0.	......	......	16,200
1367	" 9	" 10	"	Much	.25	....	1102.	246.	856.	11.5	15.7	4.3	11.4	.304	.784	.136	.648	....	....	....	.008	.3	4.7	0.	......	......	39.000
1416	" 22	" 23	"	"	.3	....	729.	186.	543.	5.6	16.7	7.2	9.5	.352	.832	.184	.648	....	....	....	.012	.85	6.4	0.	......	......	75.000
1451	Mar. 3	Mar. 5	"	Cons'd	.35	....	375.	200.	175.	6.6	9.5	7.3	2.2	.286	.456	.208	.248	....	....	....	.012	.5	6.2	0.	......	......	(17,000)
1479	" 8	" 9	"	Much	.15	....	2026.	116.	1910.	5.2	20.	5.	15.	.16	1.04	.064	.976	....	....	....	.014	.35	14.	0.	.....	......	100,000
1517	" 16	" 17	"	"	.3	....	2394.	142.	2252.	5.8	19.8	5.6	14.2	.222	1.38	.168	1.212	....	....	....	.016	2.1	23.5	2.	......	......	260.000
1552	" 22	" 22	"	"	.2	....	934.	113.	821.	4.2	18.	5.7	12.3	.252	.82	.168	.652	....	....	....	.012	.75	18.5	2.	.....	......	230,000
1590	" 29	" 30	"	"	.3	....	624.	126.	498.	4.2	12.6	5.2	7.4	.236	.456	.34	.116	....	....	....	.012	.95	13.	8.	......	......	130.000
1629	Apr. 5	Apr. 6	"	"	.3	....	489.	156.	333.	4.2	11.1	5.6	5.5	.208	.336	.152	.184	....	....	....	.017	.85	14.8	7.	......	......	19.000
1663	" 12	" 13	"	"	.38	....	689.	134.	555.	3.2	17.2	6.7	10.5	.296	.728	.176	.552	....	....	....	.03	.0	15.8	8.	......	......	104,000
1707	" 20	" 20	"	"	.4	....	904.	194.	710.	5.4	9.5	6.7	2.8	.036	.488	.144	.344	....	....	....	.018	.0	16.	12.	......	......	11,000
1746	" 26	" 27	"	"	.25	....	980.	156.	824.	5.2	18.2	6.1	12.1	.05	.672	.168	.504	....	....	....	.018	.5	17.4	16.	......	......	31.000

TABLE 156

STREAMS EXAMINATION—CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION. Report of EDWIN O. JORDAN.

SOURCE OF WATER—MISSISSIPPI RIVER. WEST OF MIDSTREAM. JEFFERSON BARRACKS. MO. University of Chicago.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1179	Jan. 4	Jan. 5	Much	Little	.12	....	375.	318.	57.	17.	5.6	5.2	.4	.616	.38	.184	.196	....	....	....	.016	.55	1.	0.	......	......	4,900
1232	" 11	" 12	"	Cons'd	.35	....	128.	280.	148.	16.	6.7	5.3	1.4	.212	.26	.096	.164	....	....	....	.002	.35	2.5	0.	......	......	4,500
1257	" 18	" 19	"	"	.5	....	582.	308.	274.	20.	7.8	1.2	3.6	.088	.376	.128	.248	....	....	....	.002	.2	2.6	3.	......	......	42,300
1293	" 25	" 26	"	Much	.25	....	552.	267.	285.	15.9	8.	4.	4.	.122	.296	.412	.184	...	....	....	.008	.75	5.9	4.	......	......	56,400
1332	Feb. 3	Feb. 5	"	Little	.2	....	400.	288.	112.	19.	6.7	4.6	2.1	.486	.288	.152	.136	....	....	....	.007	.3	6.	0.	......	......	9,200
1368	" 9	" 10	"	Much	.25	....	842.	236.	606.	12.5	15.8	4.8	11.	.296	.76	.152	.608	....	....	....	.004	.2	4.7	0.	......	......	49,000
1417	" 22	" 23	"	"	.22	....	676.	228.	448.	10.6	12.	6.4	5.6	.216	.576	.468	.408	....	....	....	.012	.5	6.4	0.	......	......	48,000
1452	Mar. 3	Mar. 5	"	Cons'd	.25	....	478.	318.	160.	19.2	7.1	4.8	2.3	.11	.272	.128	.144	....	....	....	.008	.75	6.2	0.	......	......	24,000
1480	" 8	" 9	"	Much	15	....	3706.	130.	3576.	5.4	28.6	4.6	24.	.15	1.36	.064	1.296	....	....	....	.014	.25	14.	0.	......	......	140,000
1518	" 16	" 17	"	"	.3	....	2162.	152.	2310.	7.	19.2	5.4	13.8	.19	1.54	.128	1.412	....	....	....	.014	1.	23.5	2.	......	......	300,000
1553	" 22	" 22	"	"	.2	....	1008.	115.	993.	4.2	18.6	5.8	12.8	.274	.94	.168	.772	....	....	....	.012	.7	18.5	2.	......	......	220,000
1591	" 29	" 30	"	"	.3	....	552.	134.	418.	4.6	12.5	5.2	7.3	.256	.44	.36	.08	....	....	....	.012	.9	13.	8.	......	......	150,000
1630	Apr. 5	Apr. 6	"	"	.3	....	899.	218.	681.	8.2	12.3	4.9	7.4	.11	.44	.12	.32	....	....	....	.017	.65	14.8	7.	......	......	35,000
1664	" 12	" 13	"	"	.35	....	1161.	199.	965.	6.2	17.2	5.8	11.4	.082	1.12	.376	.714	....	....	....	.028	.55	15.8	8.	......	......	70,000
1708	" 20	" 20	"	"	.4	.....	1544.	222.	1322.	7.	9.6	4.1	5.2	.036	.648	.096	.552	....	....	....	.016	.4	16.	12.	......	......	15,000
1747	" 26	" 27	"		.25	....	1574.	214.	1360.	8.4	16.7	4.8	11.9	.048	.656	.136	.52	....	....	....	.018	.75	17.4	16.	......	......	28,000

TABLE 157.

STREAMS EXAMINATION — CHICAGO SANITARY DISTRICT.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of EDWIN O. JORDAN, University of Chicago.

SOURCE OF WATER — MISSISSIPPI RIVER, 100 YARDS FROM MISSOURI SHORE, JEFFERSON BARRACKS, MO.

Serial No.	Date of: 1900 Collection.	Date of: 1900 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
1180	Jan. 4	Jan. 5	Much	Little	.13	....	384.	340,	44.	18.	5.5	3.5	2.	.522	.26	.176	.084	....	....	....	.012	.5	1.	0.	......	......	4,800
1233	" 11	" 12	"	Cons'd	.2	....	446.	312.	134.	22.	6.6	5.	1.6	.18	.34	.136	.204	....	....	....	.002	.35	2.5	0.	......	......	4,900
1258	" 18	" 19	"	"	.2	....	594.	323.	271.	22.	7.7	4.	3.7	.136	.38	.16	.22	....	....	....	.002	.05	2.6	3.	......	......	27,600
1294	" 25	" 26	"	Much	.2	....	560.	276.	284.	16.8	6.7	3.7	3.	.034	.34	.112	.228	....	....	....	.006	.4	5.9	4.	......	......	28,400
1333	Feb. 3	Feb. 5	"	Cons'd	.2	....	410.	336.	74.	19.	5.8	5.4	.4	.342	.2	.16	.04	....	....	....	.014	.3	6.	0.	......	......	7,400
1369	" 9	" 10	"	Much	.2	....	658.	255.	403.	12.5	8.6	4.3	4.3	.216	.44	.157	.283	....	....	....	.008	.25	4.7	0.	......	......	38,000
1418	" 22	" 23	"	"	.22	....	758.	238.	520.	12.	11.2	6.	5.2	.2	.552	.144	.408	....	....	....	.012	.45	6.4	0.	......	......	....
1453	Mar. 3	Mar. 5	"	Cons'd	.2	....	502.	338.	164.	16.2	7.	4.5	2.5	.094	.224	.096	.128	....	....	....	.008	.75	6.2	0.	......	......	26,000
1481	" 8	" 9	"	Much	.15	....	2865.	114.	2751.	6.4	28.6	4.5	24.1	1.64	1.376	.064	1.312	....	....	....	.014	.25	14.	0.	......	......	130,000
1519	" 16	" 17	"	"	.3	....	2174.	148.	2026.	7.	19.3	5.5	13.8	.188	1.54	.136	1.404	....	....	....	.016	1.	23.5	2.	......	......	200,000
1554	" 22	" 23	"	"	.2	....	1522.	150.	1372.	6.4	19.6	5.5	14.1	.246	.94	.168	.772	....	....	....	.013	.9	18.5	2.	......	......	240,000
1592	" 29	" 30	"	"	.3	....	796.	192.	604.	8.8	14.6	5.5	9.1	.118	.46	.192	.268	....	....	....	.018	.6	13.	8.	......	......	175,000
1631	Apr. 5	Apr. 6	"	"	.3	....	1122.	258.	864.	10.8	14.4	4.2	10.2	.07	.44	.088	.352	....	....	....	.017	.6	14.8	7.	......	......	28,000
1665	" 12	" 13	"	"	.35	....	1250.	246.	1004.	8.	15.6	6.6	9.	.078	.928	.216	.712	....	....	....	.018	.55	15.8	8.	......	......	62,000
1709	" 19	" 20	"	"	.4	....	1756.	232.	1524.	7.2	9.8	4.	5.8	.04	.632	.096	.536	....	....	....	.016	.05	16.	12.	......	......	22,000
1748	" 26	" 27	"	"	.25	....	1603.	216.	1387.	8.4	16.5	4.7	11.8	.052	.68	.136	.544	....	....	...	.018	.75	17.4	16.	......	......	55,000

TABLE 158.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ST. LOUIS, MISSOURI, TAP WATER.

Report of EDWIN O. JORDAN,
University of Chicago.

Serial No.	Date of 1900 Collection.	Date of 1900 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
1175	Jan. 1	Jan. 5	Much	V. Little	.12	None	378.	328.	50.	19.4	4.2	3.7	.5	.056	.152	.104	.048	....	....	....	.002	.1	......	......	......	......	....
1228	" 11	" 12	"	"	.15	"	374.	328.	46.	21.	4.4	4.4	.0	.064	.192	.104	.088	....	....	....	.002	.6	......	......	......	......	600
1253	" 18	" 19	"	"	.15	"	361.	330.	31.	24.	4.6	3.	1.6	.048	.208	.072	.136	....	....	....	.0	.3	......	......	......	......	670
1289	" 25	" 26	"	"	.2	"	376.	321.	52.	23.	4.8	3.2	1.6	.036	.128	.104	.024	....	....	....	.0	.4	......	......	......	......	9,300
1328	Feb. 3	Feb. 5	"	"	.2	"	360.	323.	37.	22.75	3.6	3.2	.4	.036	.128	.08	.048	....	....	....	.004	.3	......	......	......	......	11,200
1317	" 6	" 8	"	"	.2	"	364.	335.	29.	21.	4.	3.8	.2	.062	.128	.104	.024	....	....	....	.007	.25	......	......	......	......	600
1364	" 9	" 10	"	"	.15	"	366.	326.	40.	21.	3.9	2.4	1.5	.074	.136	.128	.008	....	....	....	.005	.25	......	......	......	......	500
1376	" 12	" 13	"	"	.15	"	360.	316.	44.	19.	4.4	3.8	.6	.088	.144	.088	.056	....	....	....	.010	.5	......	......	......	......	1,200
1383	" 14	" 15	"	"	.22	"	348.	300.	48.	14.6	5.5	4.7	.8	.02	.224	.136	.088	....	....	....	.011	.5	......	......	......	......	2,300
1395	" 16	" 17	"	"	.4	"	308.	256.	52.	15.1	6.3	4.8	1.5	.034	.208	.136	.072	....	....	....	.012	.55	......	......	......	......	2,800
1413	" 22	" 23	"	"	.22	"	346.	286.	60.	18.	5.	4.	1.	.016	.176	.096	.08	....	....	....	.015	.6	......	......	......	......	4,500
1448	Mar. 3	Mar. 5	"	Cons'd	.25	"	290	258.	32.	13 2	7.2	5.	2.2	.03	.208	.168	.01	....	....	....	.01	.25	......	......	......	......	6,500
1476	" 8	" 9	"	Little	.15	"	326.	267.	59.	14.6	5.6	4.4	1.2	....	.101	.018	.056	....	....	....	.016	.35	......	......	......	......	2,400
1514	" 16	" 17	"	Cons'd	Muddy	"	338.	218.	90.	9.9	7.	4.9	2.1	.002	.261	.128	.136	....	....	....	.005	.55	......	......	......	......	7,700
1549	" 22	" 22	"	Much	.18	"	413.	162.	251.	8.4	11.	1.4	6.6	.016	.368	.096	.272	....	....	....	.008	1.	......	......	......	......	75,000
1587	" 29	" 30	"	Cons'd	Muddy	"	298.	160.	138.	7.	9.	4.8	4.2	.002	.304	.176	.128	....	....	....	.006	.8	......	......	......	......	8,000
1626	Apr. 5	Apr. 6	"	"	.3	"	266.	156.	110.	6.6	7.3	4.8	2.5	.008	.2	.111	.056	....	....	....	.0	.85	......	......	......	......	16,600
1660	" 12	" 13	"	Much	.4	"	308.	176.	132.	6.2	7 7	5.3	2.4	.008	.248	.136	.112	....	....	....	.004	.7	......	......	......	......	9,500
1704	" 19	" 20	"	Cons'd	.3	"	365.	182.	183.	6.6	7.1	5.	2.1	.012	.224	.192	.032	....	....	....	.002	.0	......	......	......	......	1,700
1743	" 26	" 27	"	"	15	"	410.	200.	210.	6.6	6.3	6.2	.1	.028	.216	.114	.072	....	....	....	.0	.3	......	......	......	......	23,000
1778	May 3	May 4	"	Little	.3	"	356.	198.	158.	7.8	7.2	5.6	1.6	.016	.272	.176	.096	....	....	....	.006	4	......	......	......	......	3,500
1847	" 17	" 18	"	Cons'd	.3	"	390.	196.	194.	9.2	7.1	4 9	2.5	.008	.272	.112	.16	....	....	....	.002	4	......	......	......	......	2,900
1879	" 24	" 25	"	Little	.3	"	372.	216.	126.	8 6	6.5	5.7	.8	.002	.181	.104	.08	....	....	....	.006	.45	......	......	......	......	1,200
1914	" 31	June 1	"	"	.3	"	252.	211.	108.	10.6	5.7	4.5	1.2	.022	.192	.136	.056	....	....	....	.001	.25	......	......	......	......	3,000
1952	June 7	" 8	"	Cons'd	.4	"	426.	266.	160.	9.1	6.	4.2	1.8	.002	.176	.096	.08	....	....	....	.001	.15	......	......	......	......	6,100
1989	" 11	" 15	"	Little	.1	"	382.	240.	112.	9.5	5 6	4.5	1.1	.006	.16	.112	.018	....	....	....	.002	.2	......	......	......	......	3,900
2025	" 23	" 23	"	V. Little	.2	"	339.	212.	97.	13 6	4.8	1.1	.4	.001	.16	.136	.024	....	....	....	.002	......	......	......	......	......	7,300
2060	" 28	" 30	"	Little	.2	"	374.	216.	158.	8.2	6.	5.	1	.016	.112	.112	.0	....	....	....	.0	.35	......	......	......	......	2,400

TABLE 159.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, BRIDGEPORT.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
31	July 3	July 3	VVII.	H.	Muddy	Gassy	482.	416.	66.	89.	40.	22.	18.	12.60	2.40	.94	1.46	2.98	1.72	1.26	.0	.0	......	......	.....	+	105,000
33	" 17	" 17	VVII	M.	.4	SlGas'y	604.	534.	70.	77.	31.6	17.	14.6	6.40	1.52	.70	.82	3.48	2.08	1.40	.64	.76	7.	6.	21.	+	81,350
34	" 21	" 24	VVII.	H.	Muddy	St'gGas	591.	522.	69.	104.	41.2	18.4	22.8	16.40	1.88	1.20	.68	3.08	1.35	1.73	.....	.20	5.4	25.5	27.	+	362,250
35	" 31	" 31	VVII.	H.	"	Gassy	426.	385.	41.	75.	39.2	19.2	20.	9.00	1.30	.70	.60	3.08	1.38	1.70	.0	.0	4.7	10.	24.	+	200,000
36	Aug. 6	Aug. 7	VVH.	M.	"	"	490.	414.	76.	103.	36.	16.	20.	13.00	1.80	.80	1.00	3.45	1.38	2.07	.11	.09	5.5	19.	24.	+	515,000
37	" 14	" 14	VVII.	H.	"	"	540.	489.	51.	130.	34.2	15.7	18.5	19.00	2.05	1.16	.89	4.08	1.88	2.20	.003	.41	......	19.	21.	......	642,000
40	Sept. 11	Sept. 11	VVII.	S.	....	"	533.	468.	65.	125.5	38.	20.	18.	18.00	1.84	1.04	.80	3.96	....	....	.0	.10	5.	12.	19.	+	2,650,000
41	" 18	" 18	VVII.	VS.	....	St'gGas	524.	482.	42.	125.	40.8	23.6	17.2	19.40	2.24	1.23	1.01	3.80	1.60	2.20	.....	.....	5.	9.	15.	+	486,000
42	" 25	" 25	VVII.	VS.	....	"	635.	572.	63.	162.	48.4	23.2	25.2	23.40	2.25	1.39	.86	4.98	2.50	2.48	.005	.....	5.2	13.	19.	+	460,000
43	Oct. 2	Oct. 3	VVII.	VS.	....	"	499.	441.	58.	108.	37.6	18.	19.6	14.60	2.52	1.26	1.26	4.30	1.84	2.46	.0	.....	4.7	13.	10.	+	392,000
..	" 16	" 16	VVII.	VS.	....	Gassy	532.	459.	73.	137.	37.2	16.4	20.8	20.60	2.12	1.20	.92	4.14	2.30	1.84	.0	.....	5.6	7.	10.	+	845,000
46	" 23	" 23	VVII.	VS.	....	St'gGas	458.	390.	68.	103.5	34.4	16.4	18.	13.00	1.93	1.13	.80	3.84	1.78	2.06	.....	.....	5.	10.	20.	+	....
47	" 30	" 30	VVII.	S.	....	Gassy	524.	456.	68.	103.5	44.4	22.8	21.6	14.60	2.68	1.46	1.22	4.36	2.42	1.94	.....	.....	5.5	0.	10.	+	622,500
48	Nov. 6	Nov. 6	VVII.	S.	....	"	427.	373.	54.	77.	32.	17.6	14.4	10.60	2.00	1.26	.74	3.90	2.02	1.88	.0	.0	5.6	8.	11.	+	2,160,000
49	" 13	" 13	VVII.	VVS.	....	"	567.	498.	69.	138.5	38.8	20.4	18.4	17.40	2.79	1.64	1.15	4.10	1.70	2.40	.003	.0	5.	6.5	4.	+	725,000
50	" 20	" 20	VVII.	VH.	....	"	707.	556.	151.	149.	50.4	20.4	30.	22.00	3.32	1.50	1.82	5.74	2.30	3.44	.....	.0	5.	5.5	10.	+	1,825,000
1451	" 27	" 27	VVII.	H.	....	"	595.	438.	157.	103.	48.0	17.6	30.4	16.60	3.20	1.30	1.90	4.70	2.00	2.70	.....	.20	5.	9.	0.	+	8,425,000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 160

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS AND MICHIGAN CANAL, LOCKPORT, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE.
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Dissolved.	Suspended.	Chlorine.	Oxygen Consumed. Total.	By Dissolved	By Suspd Matter	Nitrogen as Ammonia. Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Susp'd	Organic Nitrogen. Total.	Dissolved.	Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
10	July 3	July 5	VVH.	H.	Muddy	Gassy	570.	411.	129.	107.	11.2	16.2	25.	13.00	2.60	.92	1.68	4.84	2.36	2.48	.0	.0	......	25.	29.4	+	102.250
12	" 10	" 10	VVH.	H.	"	"	560.	491.	69.	104.	34.8	16.6	18.2	13.20	2.72	1.66	1.06	4.88	3.08	1.80	.0	.0	......	21.	27.	+	630.000
14	" 17	" 17	M.	M.	55.	Sl Gas'y	591.	522.	69.	122.	24.4	17.2	7.2	7.30	1.00	.65	.35	1.88	1.28	.60	.40	.30	......	22.	29.	+	2.280 000
16	" 24	" 24	VVH.	H.	Muddy	Gassy	582	527.	55.	100.	40.4	21.0	19.4	14.00	2.70	1.60	1.10	3.48	2.68	.80	.0	.20	......	24.	29.	+	180.000
18	" 31	" 31	VVH.	H.	"	"	517.	445.	72.	99.	37.2	21.8	15.4	11.40	1.74	1.00	.74	4.72	2.58	2.14	.....	.30	.....	22.	29.	+	212.500
20	Aug. 7	Aug. 7	VVH.	M.	"	"	556.	497.	59.	132.	42.4	27.8	14.6	16.60	2.60	1.60	1.00	4.48	2.50	1.98	.0	.0	......	21.	27.	+	179.000
22	" 11	" 15	VVH.	H.	"	"	532.	477.	55.	121.	37.6	17.7	19.9	17.40	2.76	1.50	1.26	4.68	2.16	2.52	.0	.40	......	......	......	......	42.750
24	" 21	" 22	VVH.	H.	....	"	517.	449.	68.	108.	37.6	17.4	20.2	15.36	1.85	1.10	.75	3.66	1.91	1.72	.005	.40	......	22.5	31.	+	362.500
26	" 28	" 28	VH.	M.	....	"	552.	481.	68.	121.	39.6	21.4	18.2	16.60	3.00	1.94	1.06	4.72	1.98	2.74	.0	.0	......	24.	29.	+	490.000
177	Sept. 1	Sept. 5	VVH.	S.	....	"	489.	437.	52.	106.	29.6	14.	15.6	13.70	2.28	1.06	1.22	4.20	1.68	2.52	.007	.....	......	23.	29.	+	1.200.000
479	" 11	" 12	VVH.	S.	....	"	533.	468.	65.	134.	41.6	24.	17.6	20.00	2.55	1.33	1.22	3.56	2.28	1.28	.0	.0	......	18.	26.	+	2.350.000
481	" 18	" 18	VVH.	VS.	....	St'g Gas	524.	482.	42.	116.	37.6	24.	13.6	16.00	2.12	1.44	.68	3.80	2.10	1.70	.006	.10	......	20.	21.	+	167.500
483	" 25	" 26	VVH.	M.	....	"	650.	514	136.	139.	45.2	24.4	20.8	16.60	2.52	1.30	1.22	3.81	2.30	1.54	.07	.8	......	15.5	20.	+	370.000
485	Oct. 2	Oct. 3	VVH.	VS.	....	"	529.	455.	74.	113.5	39.2	21.2	17.	10.10	2.87	1.26	1.61	1.60	2.26	2.34	.03	.....	......	11.	25.	+	110.000
487	" 9	" 11	VVH.	S.	....	Gassy	432.	395.	37.	91.	34.4	19.2	15.2	13.00	2.00	1.20	.80	....	....	....	.....	.....	......	20.	21.	?	....
489	" 16	" 17	VVH.	VS.	....	"	462.	411.	51.	108.5	37.2	18.3	18.4	14.00	2.20	1.40	.80	3.66	2.30	1.36	.04	.0	......	19.	21.	......	....
191	" 23	" 24	VVH.	M	....	"	531.	443.	88.	114.5	37.6	17.6	20.	11.70	2.80	1.51	1.26	4.54	2.36	2.18	.....	.....	......	19.	23.	+	1.070.000
193	" 30	Nov. 1	VVH.	M.	....	"	559.	485.	64.	116.5	47.6	26.8	20.8	14.00	3.20	2.15	1.05	5.50	3.62	1.88	.30	.....	......	12.	18.	+	1.072.500
195	Nov. 6	" 8	VVH.	S.	....	"	575.	498.	77.	119.	42.8	20.	22.8	11.60	3.75	2.00	1.75	5.22	2.50	2.72	.06	.0	......	12.	18.	+	830.000
497	" 13	" 14	VVH.	H.	....	"	520.	458.	62.	122.5	42.8	21.2	21.6	11.70	2.60	1.30	1.30	4.31	2.10	2.24	.03	.10	......	10.	......	—	573.500
499	" 20	" 21	VVH.	VH.	....	"	620	522.	98.	125.	51.	23.6	30.1	16.00	4.10	1.60	2.80	5.50	3.24	2.26	.0	.0	......	12.	18.	......	....
1002	" 27	" 28	VVH.	VS.	....	"	517	487.	60.	120.5	43.2	19.2	24.0	17.00	2.80	1.30	1.50	4.82	2.56	2.32	.0	.10	.....	9	18.	—	177.500

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

Table 161.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Source of Water—Desplaines River, Lockport.

Report of Adolph Gehrmann,
D. B. Bisbee,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dis-solv'd	Nitrogen as Ammonia. Albuminoid Am Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
9	July 3	July 5	VVS.	VS.	.3	None	396.	383.	13.	6.2	13.8	13.6	.2	.08	.56	.52	.04	.95	.92	.03	.013	.45	......	25.	29.	—	100,000
11	" 10	" 10	VVS	VVS.	.2	"	410.	376.	34.	6.2	12.4	11.8	.6	.08	.53	.50	.03	.96	.84	.12	.018	.56	1.	24.	27.	......	500,000
13	" 17	" 17	M.	M.	.5	"	268.	190.	78.	3.1	15.	11.2	3.8	.10	.44	.36	.08	1.08	.80	.28	.038	.86	2.4	24.	29.	+	150,000
15	" 24	" 24	VS.	S.	.3	"	323.	309.	14.	4.2	13.8	12.8	1.	.08	.56	.48	.08	1.00	.80	.20	.01	.69	1.	26.	29.	+	280,000
17	" 31	" 31	VVS.	VVS.	.4	"	345.	337.	8.	5.1	12.2	12.	.2	.08	.56	.48	.08	.46	.46	....	.007	.0	1.	23.	27.	+	260,000
19	Aug. 7	Aug. 7	VS.	VVS.	.5	"	339.	335.	4.	7.	12.3	11.0	1.3	.08	.58	.52	.06	.88	.76	.12	.....	.20	1.	23.	27.	+	520,000
21	" 14	" 14	VVS.	VVS.	.5	"	308.	308.	......	6.2	11.9	11.7	.2	.08	.616	.456	.16	.88	.88	....	.014	.0	......	......	.....	+	287,500
23	" 21	" 22	VVS.	VVS.	....	"	366.	354.	12.	11.1	12.	12.	....	.04	.50	.47	.03	.74	.68	.06	.003	.40	1.2	24.	29.	—	62,000
25	" 28	" 28	VVS.	VVS.	....	"	332.	322.	10.	9.6	12.8	11.	1.8	.08	.50	.50	......	.82	.72	.10	.0	.10	1.	25.	29.	+	780,000
476	Sept. 4	Sept. 5	VVS.	VVS.	....	Gassy	321.	332.	......	9.6	13.4	13.2	.2	.08	.50	.48	.02	.86	.70	.16	.004	.....	1.	21.	29.	+	....
478	" 11	" 12	VVS.	VVS.	....	None	308.	309.	......	8.2	12.4	12.	.4	.04	.55	.53	.02	1.14	1.00	.14	.003	.20	......	20.	26.	+	....
480	" 18	" 19	VVS.	VVS.	....	"	294.	287.	7.	9.	12.4	11.6	.8	.048	.50	.43	.07	.94	.74	.20	.006	.40	......	18.	21.	+	72,500
482	" 25	" 26	VVS.	VVS.	....	"	327.	317.	10.	7.	9.6	9.4	.2	......	.416	.40	.016	.72	.66	.06	.004	.20	......	15.5	20.	+	45,500
484	Oct. 2	Oct. 3	VVS.	VVS.	....	"	338.	343.	......	7.3	9.6	8.8	.8	.08	.44	.42	.02	.86	.70	.16	.....	.....	......	14.	21.	—	19,750
486	" 9	" 11	VVS.	VVS.	....	"	377.	372.	5.	8.6	9.6	9.4	.2	.04	.46	.44	.02	....	....	....	.....	.....	......	......	......	......	....
488	" 16	" 17	VVS.	VVS.	....	"	358.	351.	7.	9.1	9.6	9.	.6	.024	.48	.44	.04	.74	.58	.16	.002	.0	1.	20.	24.	+	35,000
490	" 23	" 24	VVS.	VVS.	....	"	373.	365.	8.	7.9	8.6	8.6	....	......	.41	.34	.07	.72	.64	.08	.....	.0	1.	20.	23.	+	14,625
492	" 30	Nov. 1	VVS.	VVS.	....	"	434.	415.	19.	7.7	8.8	8.3	.5	.08	.36	.36	......	.58	.56	.02	.0	.0	1.4	14.	18.	+	32,250
494	Nov. 6	" 8	VVS.	VVS.	....	"	302.	298.	4.	12.2	9.5	8.1	1.4	.12	.56	......	......	1.00	.62	.38	.01	.0	1.	9.	20.	+	28,650
496	" 13	" 14	VVS.	VVS.	....	"	469.	465.	4.	14.8	8.	7.4	.6	......	.44	.36	.08	.74	.56	.18	.012	.30	1.	8.	......	+	24,250
498	" 20	" 21	VVS.	VVS.	....	"	459.	449.	10.	16.3	7.4	7.	.4	.04	.30	.28	.02	.62	.58	.04	.....	.0	......	11.	18.	......	24,750
1001	" 27	" 28	VVS.	VVS.	....	"	461.	447.	14.	17.2	6.8	6.2	.6	.07	.32	.28	.04	.64	.62	.02	.005	.55	......	8.	18.	+	17,000

Appearance—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 162.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—DESPLAINES RIVER. NORTH OF JACKSON ST., JOLIET.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Albuminoid Am: Dissolv'd	Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
62	July 3	July 5	VVH.	H.	Muddy	Gassy	530.	472.	58.	116.	29.2	14.2	15.	14.4	2.00	1.20	.80	3.88	2.28	1.60	.....	.0	......	22.	24.	+	55,000
64	" 10	" 10	VH.	M.	"	"	585.	553.	32.	109.	27.6	16.0	11.6	13.00	2.00	1.36	.64	4.28	2.26	2.02	.003	1.00	......	21.5	19.	+	365,000
66	" 17	" 17	VH.	M.	5	SlGas'y	508.	425.	83.	83.	26.	17.	9.	7.00	1.46	.85	.61	2.68	1.48	1.20	.028	.07	......	21.	19.	+	800,000
68	" 21	" 24	VH.	M.	.2	"	570.	538.	32.	93.	26.	19.6	6.4	12.00	1.60	1.30	.30	3.48	1.78	1.70	.003	.0	......	25.	23.	+	380,000
70	" 31	" 31	H.	VS.	Muddy	Gassy	510.	492.	48.	108.	26.0	16.4	9.6	11.40	1.60	.96	.64	3.08	2.02	1.06	.007	.10	......	22.	15.	+	280,000
72	Aug. 7	Aug. 8	VVH.	M.	.3	"	657.	487.	170.	109.	36.	15.2	20.8	20.00	2.00	1.30	.70	3.88	....	....	.21	.0	......	21.	10.5	+	4,202,000
74	" 11	" 14	VVH.	M.	.2	"	562.	417.	115.	107.	26.6	12.5	14.1	29.00	2.42	1.06	1.36	3.64	1.48	2.16	.002	.40	......	22.	15.	+	197,500
176	" 21	" 21	VVH.	M.	....	"	520.	466.	54.	106.	27.2	13.6	13.6	16.60	1.80	1.20	.60	3.00	1.60	1.40	.008	.40	......	24.	16.	.	355,000
178	" 28	" 28	VH.	VS.	....	"	531.	176.	58.	115.	32.1	17.4	15.	18.40	2.20	1.20	1.00	3.68	1.82	1.86	.008	.0	......	22.	18.	+	342,500
180	Sept. 1	Sept. 5	VH.	S.	....	"	535.	477.	58.	117.	25.2	13.8	11.4	19.40	1.97	.86	1.11	....	1.32	....	.18	....	......	20.	15.	+	612,500
182	" 11	" 11	VH.	S.	....	"	506.	451.	52.	116.	25.2	13.2	12.	17.60	1.72	.94	.78	1.54	2.30	2.24	.0	.20	......	11.	17.	+	1,765,000
184	" 18	" 18	VVH.	VVS.	....	"	478.	416	62.	111.	28.4	14.1	14.1	18.45	1.92	1.26	66	3.64	1.80	1.84	.001	.20	......	18.	12.	+	385,000
187	" 25	" 25	VVH.	VS.	....	"	568.	491.	77.	123.	29.6	15.6	14.	18.60	2.00	1.06	.94	3.90	2.38	1.52	.006	.....	......	15.	9.	+	220,000
186	Oct. 2	......	....	....	....	......	......	......	......	......	....	....	....	......	......	......	......	....	....	....	......	......	......	14.	9.	......	....
190	" 9	Oct. 11	VH.	S.	....	Gassy	522.	447.	75.	10.4	32.1	15.4	17.	14.00	2.52	1.30	1.22	....	....	....	.....	.....	......	22.	......	......	....
191	" 16	" 17	VVH.	M.	....	"	467	410.	57.	94.	27.2	17.	10.2	13.65	2.17	1.14	1.03	3.90	1.90	2.00	.17	.0	......	20.	16.	+	222,500
192	" 23	" 24	VVH.	S.	....	"	512.	419.	63.	110.5	31.2	15.4	15.8	16.00	2.68	1.58	1.10	4.14	2.22	1.92	.02	.....	......	13.	17.	+	205,500
193	" 30	" 31	VVH.	M.	....	"	554.	470.	84.	126.	32.8	19.1	13.4	11.10	2.68	1.74	.91	4.62	2.76	1.86	.01	.....	......	0.	2.	+	232,500
1330	Nov. 6	Nov. 7	VVH.	VS.	....	"	595.	547.	48.	139.	40.8	24.8	16.	16.00	2.92	1.90	1.02	4.70	2.42	2.28	.025	.0	......	−1.	−6.	+	255,000
1331	" 13	" 14	VVH.	S.	....	"	532.	479.	53.	118.	36.	20.4	15.6	13.02	2.80	1.36	1.44	4.70	2.70	2.00	.035	.0	......	3.	6.	......	....
1332	" 20	" 21	VVH.	VH.	....	"	830	582.	248.	141.	53.6	19.6	34.	18.00	3.40	.94	2.46	6.06	2.30	3.76	.0	.0	......	8.	0.	+	1,200,000
1333	" 27	" 28	VVH.	H.	....	"	655.	482.	173.	112.	43.6	15.2	28.1	11.60	3.08	1.06	2.02	6.06	1.10	4.96	.005	.10	......	0.	−8.	+	900,000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 163.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—DESPLAINES RIVER, SOUTH OF TOWN, JOLIET.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Albuminoid Am: Dissolv'd	Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
63	July 3	July 3	VVH.	H.	Muddy	SlGas'y	561.	483.	78.	117.5	28.	12.2	15.8	14.4	2.12	1.20	.92	3.58	2.16	1.42	.....	.0	......	22.5	24.	+	52.250
65	" 10	" 10	VH.	M.	"	"	600.	551.	49.	105.	27.2	15.4	11.8	12.80	2.20	1.40	.80	4.28	2.16	2.12	.066	.80	......	21.	19.	+	365.000
67	" 17	" 17	VH.	H.	.45	"	582.	441.	141.	85.	29.2	16.2	13.	7.00	1.50	.63	.87	3.00	1.28	1.72	.04	.26	......	22.	19.	+	960,000
69	" 24	" 24	VVH.	H.	.2	Gassy	656.	536.	120.	94.	30.	16.8	13.2	12.00	2.00	1.00	1.00	3.68	1.48	2.20	.....	.05	......	25.	23.	+	326.500
71	" 31	" 31	VH.	H.	.15	"	689.	493.	196.	106.	39.2	13.2	26.	11.40	2.24	.80	1.44	4.88	1.48	3.40	.0	.40	......	22.	18.	+	390.000
73	Aug. 7	Aug. 7	VVH.	H.	.3	"	731.	557.	174.	138.	40.4	14.4	26.	18.00	2.60	1.00	1.60	5.48	1.48	4.00	.018	.28	......	26.	18.	—	360.000
75	" 14	" 14	VH.	M.	.35	"	601.	513.	88.	114.	26.8	11.4	15.4	16.40	2.60	1.06	1.54	4.68	1.60	3.08	.007	.40	......	22.	17.	......	55.000
177	" 21	" 21	VH.	H.	....	"	700.	483.	217.	117.	27.2	20.2	7.	12.60	2.40	1.14	1.26	3.88	1.48	2.40	.023	.78	......	23.	18.	—	325.000
179	" 28	" 28	VH.	VH.	....	"	679.	514.	165.	119.	40.4	13.2	27.2	14.60	2.70	1.00	1.70	4.48	.88	3.60	.065	.04	......	23.	18.	+	432,500
181	Sept. 4	Sept. 5	S.	VH.	....	"	601.	507.	94.	131.	24.4	9.4	15.	14.00	2.00	.60	1.40	3.80	.56	3.24	.035	.....	......	22.	17.	+	425,000
183	" 11	" 11	VH.	S.	....	"	503.	457.	46.	115.	27.6	12.2	15.4	17.40	2.12	1.06	1.06	4.46	1.52	2.94	.0	.....	......	17.	12.	+	1,445.000
185	" 18	" 18	VVH.	VVS.	....	"	481.	427.	54.	111.	28.	15.2	12.8	17.60	1.72	1.16	.56	3.40	1.80	1.60	.02	.18	......	18.	11.5	+	435,000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 164.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—KANKAKEE RIVER, WILMINGTON, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
80	July 3	July 3	VS.	VS.	.3	None	296.	280.	16.	2.6	11.6	11.2	.4	.08	.40	.37	.03	.65	.53	.12	.018	.63	.833	25.	22.	—	9.350
81	" 10	" 10	S.	M.	.4	"	316.	272.	44.	2.8	11.	8.8	2.2	.08	.40	.36	.04	.88	.76	.12	.014	.89	1.	23.	18.	......	....
82	" 17	" 17	VS.	M.	.1	"	363.	333.	30.	2.7	10.4	8.6	1.8	.07	.40	.33	.07	.88	.61	.24	.065	.43	1.6	22.	18.	+	21.065
83	" 21	" 21	VVS.	S.	.05	"	316.	293.	53.	3.	10.7	10.5	.2	.08	.48	.31	.14	.74	.44	.30	.008	.40	1.3	27.	26.	+	1.500
84	" 31	" 31	VH.	VVS.	.15	"	321.	265.	59.	3.1	11.4	8.2	3.2	.08	.52	.24	.28	.96	.36	.60	.01	.40	1.3	24.	16.	—	23.000
85	Aug. 7	Aug. 7	VH.	VS.	.3	"	310.	273.	67.	3.4	12.6	8.8	3.8	.04	.56	.36	.20	1.08	.58	.50	.....	.20	1.	22.	18.	......	....
86	" 14	" 14	VH.	VS.	.15	"	319.	249.	70.	3.6	11.6	7.8	3.8	.65	.48	.32	.16	.88	.40	.48	.02	.40	1.	22.	17.	......	....
87	" 21	" 21	H.	VVS.	....	"	324.	253.	71.	3.7	10.9	7.8	3.1	.04	.45	.34	.11	.78	.42	.36	.....	.60	1.	22.	22.	—	24.750
88	" 28	" 28	VH.	VS.	....	"	319.	252.	67.	4.4	13.4	8.7	4.7	.03	.50	.35	.15	.78	.18	.30	.....	.20	1.	25.	20.	+	7.800
89	Sept. 4	Sept. 5	H.	M.	....	"	325.	254.	71.	4.8	10.6	7.4	3.2	.08	.43	.34	.09	.66	.34	.32	.009	.....	1.	23.	17	......	....
90	" 11	" 11	H.	VS.	....	"	297.	212.	55.	4.8	9.6	7.4	2.2	.08	.40	.32	.08	.80	.60	.20	.004	.40	1.	19.	16.	—	32.000
91	" 18	" 18	H.	VS.	....	"	290.	230.	60.	4.4	10.	6.9	3.4	.04	.36	.29	.07	.80	.60	.20	.007	.20	1.	20.	16.	·	15.000
92	" 25	" 25	H.	VVS.	....	"	285.	249.	36.	5.1	8.8	6.8	2.	......	.296	.292	.004	1.46	1.42	.01	.....	.....	1.	11.	16.	—	11.000
93	Oct. 2	Oct. 2	VS.	VVS.	....	"	263.	245.	18.	4.6	6.9	6.	.9	......	.25	.25	......	.50	.42	.08	.0	.....	.8	8.	10.		14.350
94	" 9	" 11	M.	VS.	....	"	290.	258.	32.	4.6	6.7	5.6	1.1	.02	.29	.22	.07	.....	.....	.....	.....	.....	1.	13.	7.	......	....
95	" 16	" 16	M.	VS.	....	"	300.	257.	43.	4.4	6.4	4.6	1.8	......	.25	.20	.05	.58	.36	.22	.....	.40	1.	19.	19.	+	37.500
96	" 23	" 23	M.	VS.	....	"	293.	257.	36.	4.6	5.8	4.6	1.2	.05	.25	.22	.03	.46	.30	.16	.0	.0	1.	14.	18.	+	19.500
97	" 30	" 30	M.	VVS.	....	"	254.	242.	12.	4.3	5.1	4.5	.6	......	.18	.15	.03	.38	.21	.11	.005	.....	1.	10.	17.	—	35.000
98	Nov. 6	Nov. 6	VS.	VVS.	....	"	279	275.	4.	1.3	5.6	4.	1.6	.016	.23	.21	.02	.48	.40	.08	.0	.0	1.2	5.	1.	......	....
99	" 13	" 13	VVS.	VVS.	....	"	323.	321.	......	3.8	7.6	7.2	.4	.032	.28	.23	.05	.76	.82	....	.003	2.00	1.5	5.	7.	+	19.000
100	" 20	" 21	VVS.	VVS.	....	"	334.	313.	21.	3.2	8.8	8.3	.5	.08	.31	.25	.06	.78	.72	.06	.027	2.80	1.8	8.	5.	+	30.000
1278	" 27	" 27	VS.	VS.	....	"	322.	307.	15	3.0	10.0	9.3	.7	.02	.30	.28	.02	.74	.71	....	.015	2.38	1.6	5.	0.	+	5.250

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 165.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, MORRIS, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd. Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
106	July 3	July 3	VS.	VS.	.25	None	389.	380.	9.	57.	15.	14.2	.8	7.00	.68	.52	.16	1.48	1.16	.32	.02	.60	5.2	26.	21.	—	19.650
107	" 11	" 12	VVS.	S.	.4	"	464.	450.	14.	72.	16.4	14.	2.4	8.71	.88	.76	.12	1.56	1.08	.48	.13	.67	5.3	24.	19.	—	75.600
108	" 17	" 17	VS.	M.	.1	"	380.	327.	53.	39.	13.4	10.8	2.6	4.60	.56	.40	.16	1.16	.88	.28	.11	.....	7 5	24.	18.	+	100.000
109	" 25	" 25	VS.	VS.	.25	"	448.	439.	9.	57.5	13.8	11.8	2.	7.75	.68	.60	.08	1.08	.76	.32	.08	.67	6.3	27.	22.	+	716.000
110	" 31	" 31	M.	VVS.	.25	"	428.	417.	11.	64.	14.4	12.	2.4	10.00	.90	.70	.20	1.62	1.08	.54	.01	.29	6.	24.	13.	+	772.500
111	Aug. 7	Aug. 8	M.	VVS.	.3	"	423.	428.	......	72.	14.2	11.8	2.4	11.00	1.03	.67	.36	1.68	1.20	.48	.01	.20	6.3	23.	14.	+	700.000
112	" 14	" 15	VS.	VVS.	.3	"	401.	395.	6.	79.	14.4	10.7	3.7	12.00	1.35	.70	.65	1.68	.98	.70	.004	.20	5.8	21.	14.		26.500
113	" 21	....	....	....	....	....	413.	400.	13.	71.	14.2	11.2	3.	9.70	.90	.60	.30	1.68	1.12	.56	.017	.40	5.1	25.	19.	+	632.750
114	" 29	" 30	S.	VS.	....	None	463.	452.	11.	96.5	15.8	13.2	2.6	15.00	1.10	.87	.23	1.74	1.34	.40	1.08	.12	4.1	26.	17.	+	900.000
115	Sept. 4	Sept. 5	VVS.	M.	....	"	451.	437.	14.	96.	14.2	12.4	1.8	13.50	.82	.67	.15	1.74	1.08	.66	.075	.....	4.1	25.	14.	+	500.000
116	" 12	" 13	M.	VVS.	....	"	445.	429.	16.	100.	16.6	12.8	3.8	14.50	1.40	.77	.63	2.60	2.10	.50	.16	.04	5.3	20.	16.	+	997.000
117	" 19	" 20	VS.	VS.	....	"	417.	408.	9.	94.	15.	12.2	2.8	13.60	.92	.65	.27	1.80	1.24	.56	.37	.0	5.2	13.	11.	+	600,000
118	" 25	" 27	VS.	S.	....	"	455.	446.	9.	97.5	16.8	12.2	4.6	13.60	.99	.69	.30	1.62	1.02	.60	.14	.26	5.6	17.	10.	+	161.500
119	Oct. 2	Oct. 3	M.	S.	....	"	459.	436.	23.	97.	16.2	11.6	4.6	12.60	1.00	.60	.40	1.76	1.02	.74	.18	.08	5.4	10.	12.	+	39.250
120	" 16	" 17	VS.	S.	....	"	343.	331.	12.	63.	11.	9.2	1.8	8.00	.66	.56	.10	1.02	.80	.22	.052	.15	5.6	20.	19.	+	56.250
121	" 23	" 24	M.	VS.	....	"	403.	390.	13.	74.5	15.	11.6	3.4	10.60	1.44	.70	.74	2.08	1.22	.86	.012	.0	5.6	15.	16	+	255.000
122	" 30	" 31	M.	M.	....	"	397.	386.	11.	78.	17.4	11.6	5.8	10.00	1.50	.88	.62	2.58	1.50	1.08	.008	.0	5.1	10.	- 2.	+	617.750
123	Nov. 6	Nov. 7	M.	VS.	....	"	402.	378.	24.	65.5	15.	10.6	4.4	7.60	1.10	.66	.44	2.24	1.16	1.08	.03	.17	5.6	16.	- 4.	+	627.000
124	" 14	" 15	M.	M.	....	Slight	401.	380.	21.	55.5	16.	11.	5.	6.40	1.06	.66	.40	2.04	1.38	.66	.065	1.64	6.3	8.	7.		282.250
125	" 20	" 22	M.	M.	....	"	409.	382.	27.	47.5	14.8	11.2	3.6	7.00	.88	.58	.30	1.54	1.18	.36	.09	1.61	6.3	9.	1.	+	246.000
1353	" 27	" 28	MH.	M.	....	"	410.	417.	......	55.5	19.2	12.8	6.4	8.00	1.26	.76	.50	2.30	1.54	.76	.09	1.11	6 3	6.	—4.	+	72.500

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 166.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—FOX RIVER, OTTAWA, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
134	July 3	July 3	VVS.	VS.	.1	None	306.	300.	6.	4.8	7.3	7.2	.1	.12	.32	.31	.01	.52	.44	.08	.025	.28	3.	28.	35.	—	12,350
136	" 10	" 11	VS.	VVS.	.05	"	308.	288.	20.	5.0	7.	7.2	....	.06	.32	.30	.02	.68	.52	.16	.0	.80	3.	28.	33.	+	13,500
138	" 17	" 18	S.	H.	.4	"	417.	283.	134.	3.9	15.6	9.2	6.4	.08	.81	.40	.44	1.56	.64	.92	.025	1.07	5.	26.	32.	......	....
140	" 24	" 25	VS.	S.	.15	"	218.	215.	33.	4.	10.8	8.	2.8	.07	.40	.40	......	1.00	.60	.40	.....	.20	3.	28.	35.	+	11,250
142	" 31	Aug. 1	VS.	VVS.	.2	"	289.	276.	13.	4.7	8.2	8.1	.1	.08	.42	.40	.02	.68	.58	.10	.01	.19	3.	25.	32.	—	29,500
144	Aug. 7	" 9	VVS.	VVS.	.15	"	303.	289.	14.	4.9	8.4	7.9	.5	.05	.44	.37	.07	.82	.62	.20	.....	.20	4.	27.	33.	......	13,000
146	" 14	" 15	VS.	VVS.	.15	"	305.	301.	4.	6.4	7.8	7.8	.0	.08	.46	.36	.10	.68	.58	.10	.0	.40	3.6	26.	29.	......	13,000
148	" 21	" 22	None	VVS.	....	"	303.	281.	22.	5.6	8.2	8.1	.1	.01	.41	.40	.01	.76	.70	.06	.....	.30	4.	28.	33.	......	4,900
150	" 28	" 29	VVS.	VVS.	....	"	299.	281.	18.	6.3	9.	7.7	1.3	.01	.46	.41	.05	.68	.56	.12	.0	.20	3.	31.	37.	......	....
824	Sept. 4	Sept. 5	VS.	S.	....	"	323.	318.	5.	7.5	9.	8.6	.4	.10	.42	.15	......	.72	.60	.12	.0	.20	3.6	26.	31.	......	....
802	" 11	" 12	VVS.	VS.	....	"	285.	271.	14.	5.6	8.3	7.9	.1	.012	.38	.38	......	.66	.62	.04	.0	.20	4.	25.	26.	......	....
804	" 18	" 19	VS.	S.	....	"	290.	280.	10.	6.1	7.6	7.1	.2	.02	.36	.34	.02	.66	.60	.06	.....	.0	4.	21.	21.	......	....
806	" 25	" 26	VVS.	VVS.	....	"	311.	298.	13.	6.8	7.1	6.8	.3	......	.36	.30	.06	.58	.54	.04	.006	.10	4.	18.5	22.	+	7,750
808	Oct. 2	Oct. 3	VVS.	VVS.	....	"	313.	322.	......	6.8	6.5	6.4	.1	......	.31	.30	.01	.60	.54	.06	.0	.....	4.	16.	24.	—	12,250
810	" 9	" ..	VS.	VS.	....	....	......	......	......	......	....	....	....	....	......	......	......	....	....	....	......	......	......	......	......	......	....
812	" 16	" 17	VVS.	VVS.	....	None	326.	319.	7.	6.7	6.6	6.3	.3	....	.32	.32	......	.51	.51	....	.003	.....	4.	17.	26.	+	30,650
814	" 23	" 24	VVS.	VVS.	....	"	322.	337.	......	7.4	6.4	6.1	....	......	.31	.32	.....	.62	.58	.01	.005	.0	4.5	17.5	31.	+	10,000
816	" 30	" 31	VVS.	VVS.	....	"	291.	291.	......	7.	6.2	6.3	....	.028	......	.34	......	.64	.51	.10	.012	.10	4.	13.	23.	+	21,500
818	Nov. 6	Nov. 7	VVS.	VVS.	....	"	302.	298.	4.	7.	5.9	5.9	....	......	.29	.25	.04	.51	.48	.06	.001	.0	4.	9.	21.	+	11,500
820	" 13	" 14	VVS	VVS	....	"	306.	306.	......	6.5	6.2	6.	.2	....	.28	.28	......	.42	.12	....	.003	.80	3.6	9.5	10.	—	10,500
1304	" 27	" 28	VVS.	VVS.	....	"	308.	302.	6.	6.8	6.1	5.7	.1	.05	.28	.28	......	.50	.06	....	.03	.72	3.6	7.	8.	—	18,500

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 167.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, OTTAWA, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter
	1899 Collection.	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved	By Suspd Matter.	Free Ammonia.	Albuminoid Am Tot'l	Albuminoid Am Dissolv'd	Albuminoid Am Suspnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
133	July 3	July 3	VVS.	VS.	.25	None	373.	371.	2.	42.	13.6	12.6	1.	3.32	.50	.46	.04	1.08	1.08	.0	.75	1.40	3.5	27.	35.	......	85.000
135	" 10	" 11	VVS.	VVS.	.1	"	408.	394.	14.	65.	12.2	12.2	....	2.70	.51	.48	.03	1.32	1.00	.32	.75	3.00	4.	27.	33.	—	138,500
137	" 17	" 18	S.	None	.05	"	403.	344.	59.	44.5	12.2	9.6	2.6	4.80	.52	.40	.12	1.00	.76	.24	.44	1.06	6.	25.	32.	......	....
139	" 24	" 25	VS.	S.	.2	"	407.	388.	19.	37.	11.8	10.	1.8	1.60	.56	.40	.16	.96	.76	.20	60	1.60	4.	29.	35.	+	25.650
141	" 31	Aug. 1	VS.	VS.	.1	"	427.	413.	14.	56.	11.4	10.	1.4	4.47	.75	.54	.21	1.28	.94	.34	.68	.92	4.	26.	32.	+	50.000
143	Aug. 7	" 9	VVS.	VVS.	.3	"	386.	378.	8.	54.	10.8	10.4	.4	3.60	.43	.41	.02	1.08	.98	.10	.54	1.71	3.	28.	33.	+	16.750
145	" 14	" 15	VVS.	VVS.	.3	"	377.	383.	......	60.	10.3	9.3	1.	4.96	.48	.48	.0	.88	.88	.0	.55	1.90	3.	24.	29.	+	13,000
147	" 21	" 22	None	VVS.	....	"	412.	398.	14.	68.	11.2	10.4	.8	3.30	.45	.42	.03	.98	.98	....	.90	2.80	3.	27.	33.	+	35,750
149	" 28	" 29	VVS.	VVS.	....	"	440.	410.	30.	80.	12.6	11.4	1.2	4.87	.70	.55	.15	1.18	1.00	.18	1.20	2.10	4.	30.	37.	+	30.750
825	Sept. 4	Sept. 5	VVS.	VVS.	....	"	442.	......	......	90.	11.	10.4	.6	5.20	.55	.51	.04	1.00	.86	.14	.80	.....	3.	25.	30.	—	100.000
801	" 11	" 12	VVS.	S.	....	"	444.	423.	21.	96.	11.6	10.4	1.2	6.87	.63	.50	.13	1.40	1.00	.40	1.30	1.40	3.6	24.	27.	+	....
803	" 18	" 19	VVS.	S.	....	"	416.	398.	18.	96.	11.6	10.4	1.2	10.00	.63	.50	.13	1.06	1.00	.06	.40	1.90	3.6	20.5	24.	+	46.000
805	" 25	" 26	VVS.	S.	....	"	415.	407.	8.	85.	10.	9.8	.2	7.00	.51	.50	.01	....	.88	....	.40	2.28	3.	18.	22.	+	60.000
807	Oct. 3	Oct. 3	VVS.	VVS.	....	"	451.	451.	......	98.5	10.2	10.2	....	8.20	.52	.52	......	.96	.90	.06	.30	2.50	3.	15.	21.	+	25.000
809	" 9	" ..	VVS.	VVS.	....	....	.....	......	......	......	....	....	....	......	......	......	......	....	....	....	.....	.....	3.	16.	25.	......	....
811	" 16	" 17	VVS.	VVS.	....	None	374.	375.	......	72.	10.8	9.4	1.4	10.50	.66	.52	.14	.96	.90	.06	.15	.05	3.	18.	26.	+	41.500
813	" 23	" 24	VVS.	VVS.	....	"	366.	363.	3.	69.	8.8	8.	.8	6.30	.44	.42	.02	.78	.74	.04	.60	1.30	3.	18.	26.	+	29.350
815	" 30	" 31	VVS.	VVS.	....	"	338.	338.	......	64.5	7.8	7.4	.4	8.20	.44	.42	.02	.68	.66	.02	.28	.22	3.6	13.5	23.	+	19.750
817	Nov. 6	Nov. 7	VVS.	VVS.	....	"	375.	377.	......	65.	10.	9.2	.8	7.30	.50	.44	.06	1.12	.76	.36	.14	.51	3.	8.	21.	+	37.500
820	" 13	" 14	....	VVS.	....	"	344.	342.	2.	41.	8.8	8.2	.6	4.70	.42	.36	.06	.74	.70	.04	.22	1.28	3.	9.	10.	+	10.750
1303	" 27	" 27	VS.	VVS.	....	"	393.	386.	7.	46.	10.4	10.2	.2	5.53	.48	.48	......	.94	.90	.04	.36	1.84	3.	7.	8.	+	19,000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 168.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—BIG VERMILLION RIVER, LA SALLE, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am: Tot'l	Albuminoid Am: Dissolv'd	Albuminoid Am: Susp'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
169	July 4	July 5	VS.	S.	.0	None	706.	684.	22.	42.	4.2	3.2	1.	.11	.24	.16	.08	.38	.32	.06	.03	1.17	9.1	......	......	—	11,250
172	“ 11	“ 12	VVS.	VS.	.05	“	352.	314.	38.	10.	5.1	4.7	0.4	.08	.28	.22	.06	.68	.56	.12	.045	4.66	9.11	......	......	—	15,250
378	18	“ 19	S.	M.	.05	“	421.	385.	39.	18.5	9.2	7.8	1.4	.52	.44	.34	.10	1.00	.84	.16	.15	2.00	11.6	......	......	......	....
379	“ 25	“ 26	VS.	M.	.05	“	532	513.	19.	21.5	4.6	4.1	.5	.10	.24	.14	.10	.40	.36	.04	.03	1.67	9.11	......	......	—	26,250
382	Aug. 1	Aug. 2	S.	S.	.0	“	748.	708.	40.	40.	4.	3.8	.2	.12	.22	.18	.04	.52	.52	....	.008	1.35	9.5	......	......	—	22,650
385	“ 8	“ 9	M.	VVS.	.05	“	982.	917.	65.	51.	5.4	4.1	1.3	.15	.32	.21	.11	.68	.40	.28	.012	.69	9.3	......	......	......	....
388	“ 15	“ 16	M.	M.	.05	“	638.	598.	40.	33.5	6.	4.	2.	.148	.302	.198	.104	.60	.28	.32	.007	.65	9.1	......	......	+	20,000
391	“ 22	“ 23	M.	M.	....	“	638.	561.	74.	38.	7.8	4.5	3.3	.20	.52	.30	.22	.76	.36	.40	.01	.09	9.3	......	......	+	4,600
394	“ 29	“ 30	M.	M.	....	“	805.	735.	70.	51.	8.	4.7	3.3	.72	.41	.21	.17	.74	.28	.46	.015	.09	......	......	......	+	28,333
397	Sept. 5	Sept. 6	M.	H.	....	“	1049.	973	76.	68.5	8.1	5.	3.1	.36	.40	.25	.15	.70	.20	.50	.013	0	9.2	......	......	+	31,000
400	“ 12	“ 13	M.	M.	....	“	1131.	1101	33.	83.5	7.	4.7	2.3	.19	.37	.22	.15	.82	.68	.14	.005	.20	......	......	......	......	....
403	“ 19	“ 20	S.	M.	....	“	1230.	1191.	39.	7.	6.4	4.5	1.9	.11	.32	.19	.13	.80	.14	.36	.006	.26	......	......	......	+	30,750
406	“ 26	“ 27	M.	M.	....	“	1782.	1713.	39.	137.	5.5	4.	1.5	.19	.30	.16	.14	.48	....	....	.02	.18	......	......	......	+	39,000
409	Oct. 3	Oct. 4	M.	S.	....	“	1659.	1619.	40.	13.0	5.4	3.2	2.2	.13	.24	.18	.06	.52	.38	.14	.02	.28	9.5	......	......	+	22,750
412	“ 10	“ 11	M.	VS.	....	“	1831.	1792.	39.	122.5	4.7	3.3	1.4	.15	.20	.16	.04	.54	.48	.06	.....	.20	....	......	......	......	22,000
415	“ 17	“ 18	M.	M.	....	“	1631.	1591.	43.	128.	5.	3.	2.	.12	.19	.13	.06	.44	.22	.22	.018	.18	9.7	......	......	+	20,000
418	“ 24	“ 25	M.	S.	....	“	1618.	1567.	51.	110.5	4.6	2.9	1.7	.08	.20	.14	.06	.48	.26	.22	.01	.0	......	......	......	+	21,000
421	“ 31	Nov. 1	VVS	VVS.	....	“	1675.	1644.	31.	117.5	4.1	....	....	.04	.21	.17	.04	.56	.38	.18	.007	.10	......	......	......	+	21,500
1378	Nov. 7	“ 8	VVS	VVS.	....	“	1661.	1645.	16.	121.	2.9	2.5	.4	.18	.16	.13	.03	.36	.24	.12	.014	.64	......	......	......	+	29,750
1381	“ 14	“ 15	VVS	VVS.	....	“	1788.	1754.	34.	131.5	2.8	2.4	.4	.76	.12	.11	.01	.80	.30	.50	.012	1.90	......	......	......	—	32,350
1384	“ 21	“ 22	VS.	VVS.	....	“	1327.	1336.	.....	84.	3.1	2.5	.6	.48	.16	.12	.04	.32	.32	....	.032	.97	......	......	......	......	....
1387	“ 28	“ 29	VVS.	VVS.	....	“	1591.	1581.	10.	105.	2.3	....	....	.60	.12	.08	.04	.30	.28	.02	.035	.84	......	......	......	+	16,650

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

Table 169.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Source of Water—Illinois and Michigan Canal. La Salle, Ill.

Report of Adolph Gehrmann.
D. B. Bisbee.
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
171	July 4	July 5	VS.	S.	.15	None	346.	301.	45.	12.5	10.8	8.8	2.	.72	.58	.40	.18	1.04	.88	.16	.043	.56	9.1	......	......	+	22.650
174	" 11	" 12	VVS.	S.	.1	"	375.	326.	49.	13.0	12.2	8.6	3.6	.32	.80	.42	.38	1.24	.92	.32	.07	.53	9.1	......	......	—	60.000
377	" 18	" 19	VS.	M.	.05	"	383.	332.	51.	10.	7.	5.6	1.4	.06	.26	.18	.08	.56	.40	.16	.055	4.04	11.6	......	......	+	43.000
381	" 25	" 26	VS.	S.	.1	"	348.	323.	25.	15.	8.	7.	1.	.54	.36	.28	.08	.76	.60	.16	.075	.43	9.11	......	......	+	77.000
384	Aug. 1	Aug. 2	S.	M.	.25	"	313.	276.	37.	13.5	9.	7.6	1.4	.70	.58	.36	.22	.76	.38	.38	.06	.39	9.5	......	......	+	99,250
387	" 8	" 9	M.	VVS.	.25	"	308.	279.	29.	13.	8.7	7.8	.9	.78	.48	.40	.08	1.08	.96	.12	.045	.16	9.3	......	......	+	81,000
390	" 15	" 16	VVS.	S.	.1	"	331.	307.	24.	12.5	9.3	7.2	2.1	.68	.48	.34	.14	1.04	.84	.20	.033	.37	9.1	......	......	—	29.750
393	" 22	" 23	VS.	M.	....	"	346.	298.	48.	13.	10.8	7.8	3.	.77	.58	.45	.13	.90	.84	.06	.03	.....	9.3	......	......	—	199,000
396	" 29	" 30	M.	VS.	....	"	337.	313.	24.	14.5	9.5	8.3	1.2	.68	.52	.40	.12	.94	.78	.16	.122	.28	9.3	......	......	+	433.333
399	Sept. 5	Sept. 6	M.	H	....	"	362.	325.	37.	16.5	10.2	8.5	1.7	.55	.51	.41	.10	.90	.70	.20	.027	.22	9.2	......	......	+	45.000
402	" 12	" 13	M.	H.	....	"	382.	325.	57.	18.0	12.2	8.2	4.	.67	.55	.37	.18	1.26	1.14	.12	.043	.06	9.3	......	......	—	103.500
405	" 19	" 20	S.	M.	....	"	413.	346.	67.	21.5	11.8	8.3	3.5	.75	.54	.37	.17	1.12	1.06	.06	.08	.59	9.5	......	......	+	92,000
408	" 26	" 27	M.	M.	....	"	384.	311.	73.	21.5	11.6	7.7	3.9	.62	.59	.36	.23	1.14	.71	.43	.02	.18	9.4	......	......	+	88.665
411	Oct 3	Oct. 4	M.	S.	....	"	362.	324.	38.	18.	9.6	6.9	2.7	.50	.56	.40	.16	.74	.70	.04	.12	.18	9.4	......	......	+	108.500
414	" 10	" 11	M.	M.	....	"	383.	336.	47.	15.	10.2	6.7	3.5	.48	.45	.31	.14	1.02	.98	.04	.....	.....	9.5	......	......	+	85.000
417	" 17	" 18	M.	M.	....	"	368.	319.	49.	17.	10.	7.2	2.8	.56	.48	.34	.14	1.02	.66	.36	.11	.....	9.7	......	......	+	71,500
420	" 24	" 25	M.	M.	....	"	388.	340.	48.	15.5	9.6	6.2	3.4	.456	.44	.30	.14	.86	.62	.24	.07	.0	9.7	......	......	+	104.000
423	" 31	Nov. 1	M.	S.	....	"	392.	346.	46.	17.	11.	6.2	4.8	.46	.51	.40	.11	.94	.60	.34	.043	.06	9.9	......	......	+	191,350
1380	Nov. 7	" 8	VS.	S.	....	"	370.	350.	20.	16.	7.6	6.2	1.4	.40	.42	.34	.08	.94	.60	.34	.035	.0	9.9	......	......	+	91,500
1383	" 14	" 15	M.	S.	....	"	340.	309.	31.	14.	10.2	6.5	3.7	.12	.58	.32	.26	1.18	.60	.58	.006	.30	10.3	......	......		66.750
1386	" 21	" 22	M.	S.	....	"	348.	324.	24.	15.	9.4	6.3	3.1	.22	.55	.29	.26	1.10	.78	.32	.03	.37	10.	......	......	+	167,500
1389	" 28	" 29	M.	VS.	....	"	351.	330.	21.	13.5	7.6	5.8	1.8	.32	.44	.24	.20	1.02	.80	.22	.025	.08	10.2	......	......	+	159.000

Appearance—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 170.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, LA SALLE, ILL.

Report of ADOLPH GEHRMANN.
D. B. BISBEE.
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
170	July 4	July 5	VS.	S.	.25	None	427.	389.	38.	41.	14.	11.4	2.6	1.10	.60	.40	.20	1.24	1.08	.16	.65	2.05	9.1	......	......	+	4.000
173	" 11	" 12	VVS.	VS.	.30	"	433.	410.	23.	63.5	12.8	10.8	2.	2.80	.62	.48	.14	1.16	.95	.21	.55	2.95	9.9	......	......	—	40.000
376	" 18	" 19	VS.	M.	.1	"	371.	313.	58.	30.	13.6	9.8	3.8	2.00	.64	.38	.26	1.20	.96	.24	.14	2.06	11.6	......	......	+	13.650
380	" 25	" 26	VS.	M.	.15	"	453.	356.	97.	32.	14.	9.4	4.6	.08	.56	.34	.22	1.64	.68	.96	.40	1.70	9.11	......	......	-	14.000
383	Aug. 1	Aug. 2	S.	H.	.35	"	470.	402.	68.	45.	13.	9.4	3.6	1.25	.70	.40	.30	2.08	1.38	.70	.80	2.60	9.5	......	......	+	48.650
386	" 8	" 9	M.	M.	.35	"	430.	381.	49.	47.5	11.4	8.6	2.8	.81	.48	.41	.07	1.16	.84	.32	.70	2.00	9.3	......	......		68.000
389	" 15	" 16	VS.	S.	.3	"	412.	385.	27.	57.5	10.8	9.	1.8	1.60	.536	.10	.136	1.20	1.60	.20	.70	2.25	9.1	......	......	+	11.250
392	" 22	" 23	VS.	S.	....	"	422.	395.	27.	65.	11.	9.8	1.2	1.50	.73	.47	.26	1.18	.92	.26	.85	2.10	9.3	......	......	+	21.500
395	" 29	" 30	M.	S.	....	"	429.	402.	27.	70.	12.4	10.8	1.6	1.70	.60	.14	.16	1.18	.92	.26	.70	2.50	9.4	......	......	+	40.000
398	Sept. 5	Sept. 6	M.	H.	....	"	501.	445.	56.	79.	12.4	10.	2.4	2.97	.63	.13	.20	1.06	.80	.26	1.10	1.95	9.2	......	......		21.000
401	" 12	" 13	S.	M.	....	"	443.	425.	18.	72.5	10.8	9.4	1.4	4.40	.50	.40	.10	1.00	.94	.06	.65	1.05	9.4	......	......	—	77.500
401	" 19	" 20	S.	M.	....	"	432.	392.	40.	75.5	11.	9.	2.	4.62	.18	.14	.04	1.04	.90	.14	.33	1.37	9.4	......	......	+	86.000
407	" 26	" 27	S.	S.	....	"	418.	389.	29.	73.5	9.8	9.2	.6	6.33	.456	.44	.016	.86	.78	.08	.28	2.12	9.5	......	......	+	41.750
410	Oct. 3	Oct. 4	S.	VS.	....	"	461.	416.	18.	83.	10.	9.1	.6	6.87	.56	.50	.06	1.02	.98	.01	.80	1.80	9.5	......	......	+	....
413	" 10	" 11	S.	S.	....	"	450.	438.	12.	76.5	11.	9.8	1.2	6.63	.50	.18	.02	1.26	1.04	.22	.....	.....	9.	......	......	+	66.000
416	" 17	" 18	M.	S.	....	"	414.	386.	28.	68.	10.8	8.6	2.2	5.67	.52	.42	.10	1.02	.82	.20	.36	1.44	9.8	......	......	+	34.750
419	" 24	" 25	S.	S.	....	"	381.	369.	12.	59.	9.2	7.6	1.6	1.66	.42	.40	.02	.78	.72	.06	.36	1.54	9.8	......	......	+	38.500
422	" 31	Nov. 1	S.	S.	....	"	361.	350.	11.	53.	7.8	7.1	.1	5.33	.48	.40	.08	.72	.70	.02	.26	1.24	9.11	......	......	+	35.750
1379	Nov. 7	" 8	VVS.	VVS.	....	"	382.	372.	10.	55.	8.4	8.	.4	5.33	.10	.10	......	.96	.66	.30	.14	.76	9.11	......	......	+	24.500
1382	" 14	" 15	VVS.	VVS.	....	"	340.	326.	14.	31.	8.4	7.6	.8	3.00	.36	.34	.02	.74	.71	....	.16	1.31	10.3	......	......	—	22.250
1385	" 21	" 22	VVS.	VVS.	....	"	354.	351.	......	35.5	8.6	8.	.6	3.13	.40	.32	.08	1.02	.78	.21	.36	2.01	10.4	......	......	+	33.750
1388	" 28	" 29	VVS	VS.	....	"	381.	373.	8.	39	10.	8.8	1.2	3.60	.40	.38	.02	.72	....	....	.26	1.94	10.2	......	......	+	59.250

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 171.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, HENRY, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
206	July 5	July 6	S.	M.	.25	None	392.	367.	25.	36.5	16.6	12.2	4.4	.67	.96	.52	.44	1.96	1.05	.91	.....	.....	7.5	29.	29.	+	26.750
208	" 18	" 19	VS.	M.	.2	"	346.	272.	74.	24.	12.6	9.6	3.0	1.45	.60	.34	.26	1.24	.80	.44	.28	1.97	......	......	......	+	19.000
209	" 26	" 27	VS.	M.	.3	"	376.	357.	19.	29.5	10.6	9.	1.6	.28	.52	.42	.10	1.00	.84	.16	.28	1.82	8.	31.	31.	—	12.500
210	Aug. 2	Aug. 3	M.	M.	.3	"	429.	376.	53.	38.	12.2	10.6	1.6	1.11	.70	.50	.20	1.38	1.02	.36	.32	1.88	8.	29.	29.	+	12.000
211	" 8	" 9	M.	M.	.35	"	441.	412.	29.	46.5	10.2	8.2	2.	1.34	.46	.38	.08	1.14	.76	.38	.35	1.35	7.	26.	23.	+	323.750
212	" 15	" 16	S.	M.	.3	"	419.	388.	31.	47.5	9.6	7.8	1.8	1.00	.50	.344	.156	1.13	.71	.42	.30	2.00	8.	26.	22.	+	11.000
213	" 22	" 23	VS.	S.	....	"	424.	392.	32.	57.5	20.4	12.4	8.	1.26	2.10	.90	1.20	3.78	1.56	2.22	.45	1.35	6.8	28.	29.	+	34.750
214	" 29	" 30	S.	M.	....	"	436.	390.	46.	62.	11.	10.	1.	.96	.80	.50	.30	1.74	.98	.76	.40	1.55	6.8	28.	27.	+	290.000
215	Sept. 6	Sept. 7	S.	M.	....	"	420.	386.	34.	64.5	13.0	10.8	2.2	.92	.75	.43	.32	1.46	.90	.56	.80	1.05	6.8	29.	30.	+	50.000
216	" 12	" 13	S.	M.	....	"	439.	399.	40.	63.	12.4	9.	3.4	1.25	.68	.40	.28	1.70	1.06	.64	.38	.97	6.8	20.	21.	—	52.000
217	" 19	" 20	S.	M.	....	"	430.	398.	32.	71.5	13.	9.8	3.2	2.90	.82	.41	.41	1.80	1.00	.80	.90	.95	7.1	21.	21.	+	49.000
218	" 26	" 27	M.	S.	....	"	428.	388.	40.	70.	13.4	9.6	3.8	1.33	.80	.40	.40	1.54	.78	.76	1.95	1.75	7.	18.	20.	+	31.335
219	Oct. 3	Oct. 4	M.	S.	....	"	440.	401.	39.	68.	14.	9.2	4.8	3.60	.95	.38	.57	.88	...	....	.70	2.10	7.	15.	14.	+	28.750
220	" 10	" 11	S.	S.	....	"	477.	444.	33.	76.5	12.2	8.2	4.	4.52	.74	.44	.30	1.50	.84	.66	.....	2.40	7.1	16.	16.	+	48.500
221	" 17	" 18	M.	S.	....	"	436.	407.	29.	69.	10.4	8.	2.4	4.00	.54	.38	.16	1.18	.78	.40	.22	1.78	7.2	13.	17.	—	19.500
222	" 25	" 26	S.	S.	....	"	420.	405.	15.	63.	10.	7.6	2.4	5.60	.56	.34	.22	1.06	.68	.38	.22	1.16	7.2	14.	16.	—	13.250
224	Nov. 7	Nov. 8	S.	S.	....	"	381.	367.	14.	55.	7.4	6.8	.6	.52	.38	.34	.04	.90	.82	.08	.16	1.24	7.3	9.	7.	+	11.500
225	" 14	" 16	M.	M.	....	"	389.	370.	19.	50.	8.4	7.6	.8	4.52	.40	.36	.04	.90	.70	.20	.10	1.58	7.5	9.	7.	......	....
1403	" 22	" 23	S.	S.	....	"	388.	366.	22.	40.	8.6	7.4	1.2	2.60	.38	.29	.09	.74	.70	.04	.18	1.82	7.6	8.	7.	+	23.000
1404	" 28	" 29	VS.	VVS.	....	"	366.	360.	6.	35.5	8.2	8.	.2	3.30	.37	.34	.03	.74	.70	.04	.17	1.63	7.6	8.	6.	+	14.250

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 172.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, AVERYVILLE, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE.
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
431	July 3	July 5	VS.	M.	.3	None	403.	360.	43.	24.5	12.6	10.8	1.8	.12	.52	.44	.08	1.08	.92	.16	.20	2.30	27.1	26.	25.	+	27,000
432	" 10	" 12	S.	S.	.35	"	405.	384.	21.	37.5	12.8	11.	1.8	.40	.60	.40	.20	1.68	1.24	.44	.25	2.25	27.7	26.	28.	—	16,950
433	" 18	" 19	VVS	S.	.1	"	396.	370.	26.	45.5	10.4	8.6	1.8	1.36	.60	.40	.20	1.04	.88	.16	48	2.02	29.1	26.	26.5	+	22,650
434	" 24	" 26	VS.	M.	.1	"	337.	313.	24.	30.	8.6	7.8	.8	.78	.31	.26	.08	.84	.70	.14	.34	2.36	28.8	28.	30.	+	28,000
435	Aug. 1	Aug. 2	H.	M.	.35	"	292.	239.	53.	35.5	9.5	8.4	1.1	.43	.63	.36	.27	.88	2.08	....	.24	1.96	27.6	25.	24.	+	12,750
436	" 8	" 9	M.	M	.35	"	423.	367.	56.	30.5	9.1	7.6	1.8	.26	.40	.36	.01	.92	.64	.28	.12	1.23	27.6	21.	20.	—	41,000
437	" 15	" 16	M.	M.	3	"	433.	387.	46.	38.5	10.	7.9	2.1	.38	.41	.36	.08	1.11	.44	.67	.20	1.60	27.	23.	26.	+	20,250
438	" 22	" 23	S.	M.	....	"	393.	319.	44.	43.	13.	8.6	4.4	.26	.68	41	.27	1.12	.72	.40	.14	1.21	26.7	26.	26.		34,750
439	" 29	" 30	M.	M.	....	"	398	347.	51.	47.	11.8	7.8	4.	.33	.65	.38	.27	1.58	.88	.70	.12	.93	26.7	28.	25.	+	41,250
440	Sept. 5	Sept. 6	M.	H.	....	"	409	362.	47.	52.	10.6	8.6	2.	.35	.48	42	.06	.86	.66	.20	.67	.63	27.	27.	26.	+	27,500
441	" 12	" 13	M.	M.	....	"	408.	361.	41.	51.5	10.8	8.6	2.2	.26	70	41	29	1.50	.94	.56	.11	.69	27.3	21.	26.	+	29,000
442	" 19	" 20	S.	M.	....	"	402.	374.	28.	56.5	10.1	8.	2.4	.46	.63	.36	.27	1.30	81	.46	.05	.80	27.6	20.	17.	......	......
443	" 26	" 27	M.	M.	....	"	398.	373	25.	57.5	9.4	7.4	2.	.14	.51	40	.14	1.02	.78	.21	.24	.76	27.4	12.	11.	+	13,250
444	Oct. 3	Oct. 4	S.	VVS.	....	"	423.	404.	19.	67.	11.	8.2	2.8	.12	.68	37	.31	1.18	.70	.48	.80	2.40	27.3	12.	15.	+	50,000
445	" 10	" 11	M.	S.	....	"	434.	401.	33.	68.5	12.2	8.4	3.8	.17	.80	.31	.46	1.16	.72	.74	.....	2.90	27.3	15.	17.	+	12,650
446	" 17	" 18	M.	VS.	....	"	416.	389.	27.	66.5	11.1	8.6	2.8	.18	.58	.31	.27	1.30	.78	.52	.96	3.01	27.6	18.	13.	+	24,500
447	" 24	" 25	M.	S.	....	"	455.	424.	31.	72.	12.	8.4	3.6	1.40	.72	.38	.31	1.32	.70	.62	1.18	3.62	27.6	15.	18	+	22,000
448	" 31	Nov. 1	S.	S.	....	"	118.	110.	8.	61.	9.8	8.	1.8	1.10	.50	.32	.18	.88	.52	.36	1.01	1.66	27.8	12.	8.	+	7,350
449	Nov. 7	" 8	S.	S.	....	"	373.	363.	10.	55.	7.4	6.6	.8	.38	.42	.30	.12	.82	.68	.14	.32	1.68	27.8	7.	8.	+	11,750
450	" 14	" 15	VS.	VS.	....	"	361.	353.	8.	53.	8.1	6.6	1.8	2.09	.48	.32	.16	.86	.62	.21	.30	1.70	28.2	9.	9.	......	......
1428	" 21	" 22	M.	VS.	....	"	365.	360.	5.	50.	8.2	6.8	1.4	1.10	.12	29	.13	.86	.78	.08	.08	1.20	28.3	10.	12	+	25,500
1429	" 28	" 29	VS.	VVS.	....	"	356.	313.	43.	31.	7.4	6.6	.8	2.00	.36	30	.06	.70	.46	.24	07	1.61	28.10	6.	4	+	7,500
....	....	....	....	....	....	....	......	......	......	.....	....	....	....	......	......	......	......	....	....	....	..	....	......	......	......	......	....

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium

TABLE 173.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, WESLEY CITY, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am. Tot'l	Nitrogen as Ammonia: Albuminoid Am. Dissolv'd	Nitrogen as Ammonia: Albuminoid Am. Susp'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
350	July 3	July 5	VS.	M.	.25	None	400.	356.	44.	24.	13.2	11.4	1.8	.09	.49	.41	.08	1.24	1.08	.16	.18	1.92	6.	......	24.	+	1,916.000
330	" 10	" 12	S.	S.	.35	"	418.	381.	37.	35.	13.2	11.6	1.6	.21	.64	.44	.20	1.36	1.24	.12	.22	2.88	6.	25.	30.	—	670.000
*	" 16	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	....	......	......	......	......	....
344	" 24	July 26	VS.	S.	1	None	327.	305.	22.	31.5	8.4	8.	.4	.42	.34	.26	.08	.84	.76	.08	.28	1.82	6.	......	33.	+	5,510,000
*	Aug. 1	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	....	......	......	......	......	....
*	" 8	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	....	......	......	......	......	....
263	" 16	Aug. 17	M.	M.	....	None	424.	347.	77.	31.5	10.5	7.9	2.6	1.10	.48	.36	.12	1.00	.68	.32	.32	.98	......	25.	21.	......	....
329	" 21	" 23	VVS.	M.	....	"	420.	377.	43.	44.	12.6	10.	2.6	.60	.98	.53	.45	1.58	.90	.68	.25	1.20	6.	......	......	+	500.000
331	" 28	" 30	M.	M.	....	"	381.	346.	35.	46.	13.	9.4	3.6	.42	.60	.44	.16	1.32	.88	.44	.085	.62	7.	......	......	+	212.500
211	Sept. 5	Sept. 6	S.	H.	....	"	439.	352.	87.	49.	17.	10.2	6.8	.35	.95	.43	.52	1.52	.74	.78	.07	.88	......	28.	38.	......	....
242	" 12	" 13	M.	M.	....	"	399.	366.	33.	53.5	11.6	9.4	2.2	.30	.63	.46	.17	1.40	1.04	.36	.11	.69	1.	20.	27.	+	1,020,000
245	" 26	" 27	M.	VS.	....	"	390.	359.	31.	56.5	10.8	8.8	2.	.32	.74	.44	.30	1.42	.90	.52	.10	.90	1.	15.	18.	......	....
247	Oct. 3	Oct. 4	S.	M.	....	"	418.	391.	27.	63.	11.4	7.6	3.8	.16	.72	.36	.36	1.30	.78	.52	.20	1.40	1.	12.	24.	+	240.000
249	" 10	" 12	S.	VS.	....	"	410.	375.	35.	69.5	15.2	10.8	4.4	1.12	.82	.50	.32	1.74	1.08	.66	.84	.....	1.	12.	22.	+	1,550.000
1030	" 18	" 20	M.	S.	....	"	416.	396.	20.	69.5	17.6	12.6	5.	.84	1.81	1.00	.81	2.40	1.48	.92	1.68	.....	1.	15.	21.	+	6.765,000
1032	" 26	" 27	M.	M.	....	"	429.	404.	25.	67.	13.4	9.6	3.8	1.24	.88	.48	.40	1.84	1.06	.78	.96	2.14	1.	16.	15.	......	....
1036	" 31	Nov. 2	S.	M.	....	"	472.	426.	46.	67.	26.0	13.6	12.4	1.20	1.86	.84	1.02	3.30	1.42	1.88	1.44	3.56	1.5	10.	15.	+	5,000,000
1035	Nov. 7	" 9	S.	S.	....	"	413.	395.	18.	61.	12.2	9.4	2.8	2.80	.86	.52	.34	1.54	.98	.56	.60	2.20	1.	6.	16.	+	77.500
1041	" 15	" 16	M.	M.	....	"	401.	390.	11.	55.	15.8	10.6	5.2	3.60	1.44	.78	.66	2.30	1.50	.80	.24	2.28	2.	10.	16.	......	....
1038	" 22	" 24	M.	VS.	....	"	386.	357.	29.	51.5	8.6	6.8	1.8	3.74	.44	.27	.17	.94	.66	.28	.09	1.59	1.5	0.	5.	......	....

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

*No Sample.

TABLE 174

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, PEKIN, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
232	July 6	July 8	VS.	S.	.15	None	383.	365.	18.	25.	13.4	11.8	1.6	.70	.60	.52	.08	1.38	.96	.42	.....	.....	1.	24.	30.	......	....
233	" 12	" 13	VVS.	S.	.2	"	416.	391.	25.	36.5	14.8	12.	2.8	.75	.70	.44	.26	1.72	1.12	.60	.36	1.74	1.	28.	33.	+	686.500
234	" 19	" 19	VVS	S.	.1	"	399.	353.	46.	40.5	12.4	10.2	2.2	.83	.64	.48	.16	1.48	.84	.53	.28	1.97	2.	26.	32.	+	370.000
235	" 25	" 26	VS.	M.	.1	"	333.	299.	34.	31.	9.4	8.	1.4	.83	.40	.30	.10	1.08	.84	.24	.24	1.66	1.5	30.	34.	+	1.653.500
236	Aug. 1	Aug. 2	M.	S.	.4	"	346.	319.	27.	34.	12.9	9.8	3.1	1.00	1.00	.70	.30	1.48	.88	.60	.68	1.02	1.	25.	34.	+	2,880.000
237	" 8	" 9	VS.	M.	.35	"	368.	345.	23.	29.5	10.2	8.4	1.8	.68	.56	.40	.16	1.12	.84	.28	.21	.74	1.	21.	23.	+	1,157.000
238	" 15	" 16	VS.	M.	.3	"	399.	370.	29.	35.5	10.4	8.5	1.9	.741	.48	.40	.08	1.11	.71	.40	.30	1.50	.5	25.	33.	+	16.000
338	" 22	" 23	VVS.	VS.	....	"	384.	372.	12.	43.5	12.4	10.4	2.	.50	.70	.44	.26	1.56	.98	.58	.23	1.32	.5	26.	40.	+	42.000
240	" 29	" 30	S.	S.	....	"	384	366.	18.	54.	12.	10.2	1.8	.49	.90	.42	.48	1.64	.88	.76	.11	.49	1.	29.	40.	+	45.000
241	Sept. 5	Sept. 7	S.	M.	....	"	126.	360.	66.	50.	15.6	9.4	6.2	.35	.83	.38	.45	1.12	.70	.42	.16	.54	1.	28.	41.	+	187,500
242	" 12	" 13	S.	M.	....	"	396.	365.	31.	52.	11.6	9.6	2.	.30	.56	.40	.16	1.42	1.00	.42	.07	.79	1.	20.	27.	+	1,020.000
213	" 18	" 21	S.	M.	....	"	127.	355.	72.	52.	12.8	8.6	4.2	.17	.90	.42	.48	1.40	.76	.64	.085	.52	1.6	20.	21.	+	462,000
215	" 26	" 27	M.	VS.	....	"	373.	356.	17.	51.5	10.6	8.6	2.	.01	.63	.41	.22	1.50	.90	.60	.06	1.21	1.	15.	18.	......	....
247	Oct. 3	Oct. 4	S.	M.	....	"	391.	372.	19.	55.	10.6	8.6	2.	.36	.60	.38	.22	1.20	.96	.24	.28	1.22	1.	12.	24.	+	580.000
219	" 10	" 12	S.	S.	....	"	358.	337.	21.	56.5	10.6	8.6	2.	.68	.70	.39	.31	1.38	.86	.52	.64	.86	1.	12.	22.	+	3,490.000
1027	" 18	" 19	S.	S.	....	"	101.	390.	11.	68.	12.6	9.	3.6	.82	.80	.48	.32	1.66	.94	.72	.64	2.36	1.	15.	21.	+	617.500
1031	" 26	" 27	M.	M.	....	"	437.	410.	27.	67.	13.4	8.6	4.8	1.28	1.04	.54	.50	1.82	1.10	.72	1.12	1.70	1.	16.	15.	+	2,225.000
1036	" 31	Nov. 2	S.	S.	....	"	427.	405	22.	66.	12.2	9.4	2.8	.20	.81	.10	.44	1.34	.70	.64	.36	3.74	1.5	10.	14.	+	305.000
1037	Nov. 7	" 9	S	S.	....	"	415.	395.	20.	60.	9.2	7.6	1.6	2.00	.56	.36	.20	1.46	.81	.62	.80	1.90	1.	6.	15.	+	60.000
1042	" 15	" 16	M.	S.	....	"	390.	370.	20.	52.5	9.	6.8	2.2	2.80	.48	.32	.16	1.18	.86	.32	.12	2.58	2.	10.	16.	......	....
1034	" 22	" 21	M.	S.	....	"	391.	370.	21.	50.5	10.	8.	2.	4.00	.70	.52	.18	1.38	.90	.48	.13	1.27	1.5	0.	5.	.....	.....

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 175.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, HAVANA, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
256	July 5	July 6	M.	M.	.2	None	401.	387.	14.	20.	13.2	11.2	2.0	1.00	.56	.52	.04	.76	.28	.48	.....	.....	4.7	26.	24.	+	11,500
257	" 12	" 13	VVS.	M.	.1	"	407.	374.	33.	28.	12.2	10.6	1.6	1.10	.52	.42	.10	1.36	.84	.52	.25	1.45	4.1	26.	29.	+	19,065
259	" 19	" 20	VVS.	VVS.	.1	"	384.	379.	5.	37.5	10.6	9.8	0.8	.84	.40	.37	.03	1.00	.82	.18	.26	1.74	4.9	27.	30.	+	74,500
260	" 26	" 27	VS.	S.	.25	"	348.	317.	31.	31.5	8.4	7.8	.6	.84	.54	.36	.18	.92	.76	.16	.28	1.12	4.8	30.	35.	+	23,650
261	Aug. 2	Aug. 3	M.	M.	.3	"	364.	322.	42.	30.5	9.8	8.7	1.1	.87	.62	.55	.07	1.28	1.08	.20	.21	.69	......	......	......	—	7,000
262	" 9	" 10	M.	M.	.2	"	384.	330.	54.	30.	9.4	7.4	2.	1.00	.50	.30	.20	1.02	.76	.26	.165	1.04	4.1	26.	30.	+	21,250
263	" 16	" 17	M.	M.	....	"	424.	347.	77.	31.5	10.5	7.9	2.6	1.10	.48	.36	.12	1.00	.68	.32	.32	.98	3.2	25.	27.5	+	9,250
264	" 23	" 24	M.	M.	....	"	419.	349.	70.	35.	10.4	8.5	1.9	.87	.52	.36	.16	.94	.58	.36	.26	.20	3.	26.	31.	+	34,500
265	" 30	" 31	M.	S.	....	"	423.	384.	39.	42.	11.	9.6	1.4	.50	.60	.45	.15	1.28	.98	.30	.24	.16	2.2	29.	26.	+	30,333
266	Sept. 6	Sept. 7	M.	M.	....	"	398.	345.	53.	41.5	12.8	10.6	2.2	.75	.75	.48	.27	1.56	.62	.94	.036	.17	2.4	29.	33.	+	67,000
267	" 13	" 14	M.	M.	....	"	435.	343.	92.	46.	13.2	9.4	3.8	.95	.70	.50	.20	1.54	.94	.60	.....	.34	......	......	......	+	350,000
268	" 20	" 21	H.	M.	....	"	410.	303.	107.	39.5	12.4	8.4	4.	.70	.68	.40	.28	1.04	.76	.28	.15	.25	3.6	14.	12.	......	....
269	" 27	" 28	H.	S.	....	"	429.	350.	79.	50.	11.2	8.	3.2	.84	.68	.44	.24	1.26	.78	.48	.11	.29	3.	16.	17.	+	22,500
270	Oct. 4	Oct. 5	M.	M.	....	"	425.	359.	66.	53.	12.6	7.9	4.7	.40	.76	.45	.31	1.82	1.02	.80	.27	.83	3.	14.5	13.	+	145,000
271	" 11	" 12	M.	S.	....	"	460.	397.	63.	62.0	11.6	8.2	3.4	.80	.72	.44	.28	1.20	.98	.22	.....	.60	2.6	15.	21.	+	21,250
272	" 18	" 19	S.	M.	....	"	423.	348.	75.	60.	13.4	9.	4.4	1.44	.80	.44	.36	1.66	.86	.80	.60	.60	3.2	17.	9.	+	17,000
273	" 25	" 26	M.	M.	....	"	446.	391.	55.	60.	11.8	8.6	3.2	1.60	.68	.44	.24	1.38	.88	.50	.78	.60	3.	12.	19.	+	32,750
274	Nov. 1	Nov. 2	S.	S.	....	"	435.	393.	42.	64.5	12.	9.	3.	1.40	.74	.41	.33	1.38	....	....	1.04	2.16	3.5	9.	8.	+	41,000
275	" 8	" 9	S.	S.	....	"	404.	395.	9.	56.5	11.	8.2	2.8	2.40	.69	.50	.19	1.90	.96	.94	1.20	1.60	4.6	7.	15.	+	845,000
1101	" 15	" 16	S.	S.	....	"	385.	369.	16.	52.	10.2	7.2	3.	3.00	.72	.40	.32	1.88	.91	.94	.22	1.98	3.7	10.	11.	......	....
....	" 22	" 23	S.	S.	....	"	332.	308.	24.	33.	9.6	5.6	4.	2.40	.35	.26	.09	.94	....	....	.12	1.28	4.4	11.	12.	+	106,000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 176.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—SANGAMON RIVER, CHANDLERVILLE, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE.
Municipal Laboratory, Chicago

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dis-solv'd	Nitrogen as Ammonia. Albuminoid Am Sus-pnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
279	July 5	July 6	H.	H.	....	None	447.	290.	157.	5.1	8.4	3.5	4.9	.02	.32	.14	.18	.60	.80	....	.....	.....	......	27.	28.	+	16,500
280	" 12	" 13	VVS.	H	....	"	402.	266.	136.	4.6	7.9	4.	3.9	.08	.36	.17	.19	.72	.48	.24	.036	2.06	4.	27.	32.	—	24,000
281	Aug. 3	Aug. 3	M.	M.	....	"	372.	308.	64.	5.6	4.5	3.5	1.	.08	.30	.17	.13	.62	.44	.18	.022	.38	3.	26.	33.	+	10,500
282	" 9	" 10	M.	H	....	"	421.	255.	166.	4.5	7.8	3.8	4.	.14	.37	.17	.20	.76	.50	.26	.06	.94	3.6	25.	29.	+	44,350
283	" 16	" 17	M.	H.	....	"	388.	295.	93.	5.8	6.6	3.6	3.	.04	.33	.16	.17	.52	.20	.32	.025	.98	.5	26.	29.	—	34,750
284	" 31	Sept. 1	M.	M.	....	"	651.	319.	332.	6.4	9.8	3.8	6.	......	.60	.50	.10	....	....	....	.006	.20	......	27.	27.	—	11,750
285	Sept. 13	" 14	M.	M.	....	"	378.	285.	93.	4.5	6.2	3.3	2.9	.02	.32	.16	.16	.66	.30	.36	.....	.20	Low	22.	21.	—	5,465
286	" 20	" 21	H.	M.	....	"	372.	277.	95.	.....	6.1	3.2	2.9	.016	.32	.16	.16	.61	.28	.36	.008	.30	"	19.	21.	+	62,000
269	" 28	" 28	H.	S.	....	"	429.	350.	79.	5.0	11.2	8.	3.2	.84	.68	.14	.24	1.26	.78	.48	.11	.29	"	7.	16.	+	28,250
288	Oct. 4	Oct. 5	H.	S.	....	"	320.	290.	30.	4.9	3.9	2.1	1.8	.02	.28	.20	.08	.78	.34	.44	.004	.....	"	6.	23.	+	7,750
289	" 18	" 19	S.	S.	....	"	351.	291.	60.	5.2	4.8	2.4	2.4	......	.23	.11	.12	.52	.24	.28	.005	.....	"	12.	22.	+	14,250
290	" 25	" 26	M.	S.	....	"	353.	308.	45.	5.6	4.8	2.7	2.1	.016	.26	.14	.12	.56	.26	.30	.....	.....	"	18.5	27.	+	13,250
291	Nov. 1	Nov. 2	S.	S.	....	"	333.	294.	39.	6.7	4.6	2.8	1.8	......	.20	.11	.09	.74	.18	.56	.008	.....	"	10.	8.	+	18,350
292	" 8	" 9	VS.	S.	....	"	317.	291.	26.	6.8	3.9	3.2	.7	.018	.18	.17	.01	.58	.22	.36	.....	.....	1.	10.	14.	+	14,750
293	" 15	" 16	S.	S.	....	"	310.	288.	22.	7.0	3.8	2.8	1.	.01	.36	.30	.06	.66	.38	.28	.015	.60	1.	12.	16.	......	....
294	" 22	" 23	M.	M.	....	"	330.	279.	51.	6.6	5.3	3.8	1.5	.12	.22	.15	.07	.54	.40	.11	.01	.....	2.	13.	14.	+	13,750

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 177.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, BEARDSTOWN, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE.
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	1899 Examination.	Appearance: Turb'y.	Sediment.	Color.	Odor	Residue on Evaporation: Total.	Dis-solved.	Sus-pended	Chlorine.	Oxygen Consumed: Total.	By Dis-solved.	By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am: Tot'l	Dis-solv'd	Sus-pnd'd	Organic Nitrogen: Total.	Dis-solved.	Sus-pended	Nitrogen as: Nitrites	Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
304	July 6	July 8	VH.	S.	.1	None	438.	319.	119.	15.	11.6	8.6	3.	.36	.50	.40	.10	1.08	.88	.20	.....	....	7.1	25.	26.5	+	30,350
306	“ 13	“ 14	M.	M.	.1	“	376.	301.	75.	18.5	10.8	8.4	2.4	.45	.42	.30	.12	1.04	.88	.16	.135	2.77	6.8	29.	34.	—	3,000
307	“ 20	“ 21	VH.	M.	.1	“	452.	358.	91.	28.0	10.8	9.5	1.3	.56	.50	.37	.13	1.04	.81	.20	.20	1.00	6.9	28.	31.	+	5,500
307	“ 27	“ 28	VS.	M.	.3	“	406.	342.	61.	33.5	7.8	6.8	1.0	.62	.42	.36	.06	.88	.61	.24	.23	2.07	6.8	21.	27.	+	2,400
308	Aug. 3	Aug. 4	M.	M.	.1	“	364.	309.	55.	26.5	7.6	6.5	1.1	.55	.40	.32	.08	.92	.60	.32	.12	1.88	6.4	25.5	31.	—	10,750
309	“ 10	“ 11	H.	M.	.3	“	337.	283.	54.	25.5	7.8	6.7	1.1	.50	.44	.32	.12	.82	.68	.14	.146	.85	7.9	21.	27.	+	16,750
310	“ 17	“ 18	M.	M.	....	“	380.	324.	56.	24.	8.	6.9	1.1	.48	.40	.32	.08	.76	.58	.18	.20	.90	6.3	23.	27.	—	15,000
311	“ 24	“ 25	M.	M.	....	“	331.	291.	43.	22.	8.2	6.8	1.4	.45	.36	.29	.07	.84	.68	.16	.12	.78	6.2	21.	27.	+	49,999
312	“ 31	Sept. 1	M.	S.	....	“	374.	372.	2.	28.	7.4	6.9	.5	.80	.40	.40	......	....	....	....	.14	.86	6.	20.	27.	—	9,000
313	Sept. 7	“ 8	M.	S.	....	“	364.	350.	14.	30.5	7.3	6.8	.5	.41	.36	.35	.01	.74	.64	.10	.....	.....	6.2	25.5	32.	+	28,000
314	“ 14	“ 15	S.	S.	....	“	354.	315.	39.	27.	8.	7.3	.7	.88	.41	.34	.07	.84	.76	.08	.....	.....	6.2	15.5	13.	+	45,000
315	“ 21	“ 22	VH.	H.	....	“	346.	243.	103.	22.	9.2	6.7	2.5	.46	.42	.27	.15	.80	.60	.20	.072	.73	7.	21.	16.	—	38,750
316	“ 28	“ 29	VH.	H.	....	“	355.	312.	43.	35.5	7.6	6.6	1.	.72	.37	.31	.06	.86	....	....	.06	.54	6.4	15.5	13.	+	17,750
317	Oct. 5	Oct. 6	H.	S.	....	“	370.	334.	36.	41.	8.	6.7	1.3	.42	.53	.36	.17	1.02	.62	.40	.....	1.00	6.2	13.	16.	+	9,250
318	“ 12	“ 13	M.	S.	....	“	391.	350.	41.	44.5	8.2	7.5	.7	.20	.54	.43	.11	.98	.54	.44	.....	.....	6.3	16.	20.	+	26,500
319	“ 19	“ 20	M.	S.	....	“	370.	319.	51.	41.5	8.6	7.	1.6	.86	.40	.36	.04	1.04	.68	.36	.10	.....	6.6	18.	14.	+	20,500
320	“ 26	“ 27	M.	S.	....	“	395.	355.	40.	51.	8.6	6.8	1.8	1.04	.46	.36	.10	1.06	.86	.20	.22	1.00	6.5	19.	18.	+	16,500
321	Nov. 2	Nov. 3	M.	S.	....	“	411.	378.	33.	50.5	8.9	6.5	2.4	1.08	.49	.32	.17	.96	.60	.36	.43	1.42	6.7	2.	0.	+	17,000
322	“ 9	“ 10	S.	S.	....	“	386.	362.	24.	54.	10.9	7.4	3.5	.46	.82	.36	.46	1.58	.76	.82	.42	2.88	6.6	8.	6.	+	27,500
323	“ 16	“ 17	S.	M.	....	“	383.	365.	18.	46.	9.4	7.2	2.2	2.20	.64	.34	.30	1.28	.70	.58	.24	1.76	6.8	12.	12.	......	....
324	“ 23	“ 24	S.	M.	....	“	377.	311.	36.	40.	8.6	6.6	2.	2.40	.49	.33	.16	.86	....	....	.10	1.30	7.2	10.	12.	+	24,500
325	“ 30	Dec. 1	S.	S.	....	“	376.	350.	26.	39.5	8.	6.4	1.6	2.80	.48	.33	.15	.90	.58	.32	.07	1.33	6.6	6.5	6.	+	13,500
....	....	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	....	....	......	......	....	......	....

APPEARANCE—H., Heavy. VH., Very Heavy VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 178.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, KAMPSVILLE, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter	Nitrogen as Ammonia. FreeAmmonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
357	July 12	July 13	VVS.	M.	.05	None	304.	251.	50.	10.5	8.	7.4	.6	.04	.34	.25	.09	.80	.64	.16	.11	1.29	13.9	27.	29.	-	2,400
358	" 19	" 20	M.	VVS.	.1	"	312.	317.	25.	17.5	7.6	7.4	0.2	.08	.38	.30	.08	.78	.70	.08	.13	1.07	16.	29.	33.	—	6,150
360	Aug. 2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	—	14.500
361	" 11	Aug. 14	.....	.....	.15	None	412.	173.	239.	10.	6.9	5.4	1.5	.16	.32	.22	.10	.76	.36	10	.115	.89	16.5	27.	31.	+	25,500
363	" 16	" 24	M.	M.	.....	"	329.	296.	33.	19.	7.6	7.3	.3	.04	.40	.29	.11	.80	.48	.32	.076	.52	15.5	28.	32.	+	2.325
364	" 30	" 31	M.	M.	.....	"	342.	298.	44.	20.	8.4	6.9	1.5	.05	.41	.28	.16	.98	.82	.16	.112	.39	15.2	29.	32.	+	49,500
365	Sept. 6	Sept. 7	S.	S.	.....	"	320.	301.	19.	20.	7.5	6.9	.6	.19	.35	.29	.06	.60	.40	.20	.....	.....	15.1	29.	32.	—	40.500
366	" 13	" 14	S.	S.	.....	"	359.	322.	37.	25.	7.5	6.7	.8	.21	.36	.29	.07	1.01	.80	.24	.....	.46	15.3	22.	20.	+	31.000
367	" 20	" 21	H.	M.	.....	"	319.	230	89.	19.3	8.4	6.6	1.8	.36	.40	.29	.11	.76	.....	.....	.057	.65	15.6	19.	18.	+	54,000
...	" 27	" 28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.3	17.	18.	+	28,000
370	Oct. 11	Oct. 12	M.	VS.	.....	None	345.	330.	15.	33.	7.2	6.4	.8	.20	.31	.27	.07	.76	.68	.08	.04	.56	15.2	17.	22.	+	24,000
371	" 18	" 19	M.	M.	.....	"	362.	322.	40.	38.	7.6	6.1	1.5	.15	.41	.33	08	.98	.64	.34	.012	.24	15.5	17.	14.	.....	.....
372	" 25	" 26	M.	S.	.....	"	366.	329.	37.	38.	7.3	6.2	1.1	.31	.33	.29	.01	.81	.70	.14	.06	.90	15.4	17.5	23.	+	12,750
373	Nov. 1	Nov. 3	M.	S.	.....	"	375.	336.	39.	40.5	7.3	6.	1.3	.56	.37	.34	.03	.86	.60	.26	.01	.80	15.6	12.	9.	.....	.....
374	" 8	" 10	M.	S.	.....	"	361.	335.	26.	41.5	6.6	5.7	.9	.67	.43	.36	.07	1.42	.66	.76	.095	2.50	15.6	10.	12.	+	9.000
375	" 15	" 16	S.	S.	.....	"	359.	326.	33.	41.	13.4	6.8	6.6	.12	1.06	.31	.75	.....	.78	.....	.20	1.20	15.7	12	15.	.....	.....
1227	" 22	" 23	M.	S.	.....	"	376.	327.	49.	33.	10.	5.6	4.4	.61	.68	.27	.41	1.46	.60	.86	.075	2.80	16.	12.	13.	+	34,000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 179.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ILLINOIS RIVER, GRAFTON, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
514	July 5	July 7	VS.	VVS.	.05	None	313.	306.	7.	10.5	8.4	7.8	.6	.02	.42	.32	.10	.76	.60	.16	.....	.....	14.6	29.	28.	—	11,350
516	" 12	" 13	VVS.	VVS.	.05	"	307.	300.	7.	10.4	7.5	7.1	.4	.15	.38	.32	.06	.76	.58	.18	.12	1.18	13.2	29.	32.	+	13,700
518	" 19	" 20	M.	VVS.	.05	"	329.	313.	16.	14.0	7.5	7.4	0.1	.12	.44	.30	.14	.92	.76	.16	.08	.12	9.7	33.	36.	—	20,500
521	" 26	" 27	VVS.	VS.	.25	"	347.	329.	18.	24.5	7.6	7.5	.1	.12	.35	.33	.02	....	....	....	.12	1.68	7.6	34.	37.	—	15,350
522	Aug. 2	Aug. 3	M.	VS.	.3	"	367.	345.	22.	32.5	7.	7.	....	.02	.38	.22	.16	.92	.68	.24	.12	2.08	6.1	33.	37.	—	32,750
524	" 9	" 10	VH.	M.	.25	"	381.	203.	178.	15.5	8.2	5.2	3.	.12	.38	.24	.14	.84	.54	.30	.105	2.90	7.6	25.	28.	+	62,500
551	" 16	" 17	VH.	M.	....	"	300.	183.	117.	8.5	9.6	7.2	2.4	.08	.37	.23	.14	.58	.50	.08	.06	.84	6.	26.	29.	+	25,000
553	" 21	" 24	M.	M.	....	"	311.	276.	35.	17.5	8.4	7.6	.8	.02	.335	.27	.065	.72	.36	.36	.05	.49	4.2	31.	31.	+	11,750
555	" 30	" 31	H.	VS.	....	"	310.	275.	35.	15.	8.	6.8	1.2	.05	.31	.28	.03	.76	.36	.40	.05	.25	3.3	30.	31.	+	19,250
557	Sept. 6	Sept. 7	H.	VS.	....	"	336.	318.	18.	21.	7.9	6.7	1.2	.18	.41	.28	.13	.50	.40	.10	.....	.....	3.4	35.	34.	—	44,000
559	" 13	" 14	M.	VS.	....	"	336.	309.	27.	21.	7.5	6.4	1.1	.24	.33	.31	.02	.88	.66	.20	.....	.....	4.4	24.	22.	+	23,000
561	" 20	" 21	H.	S.	....	"	356.	291.	65.	24.5	7.5	6.3	1.2	.25	.37	.29	.08	.76	.72	.04	.057	.75	4.8	20.	19.	+	46,650
563	" 27	" 29	H.	VVS.	....	"	305.	256.	49.	23.5	7.2	6.2	1.	.40	.32	.31	.01	.64	.56	.08	.....	.....	4.1	19.	20.	+	17,250
565	Oct. 4	Oct. 5	VH.	VS.	....	"	280.	234.	46.	20.	6.7	5.7	1.	......	.29	.28	.01	.62	.42	.20	.018	.80	......	16.	20.	+	29,000
567	" 11	" 12	M.	VVS.	....	"	346.	316.	30.	31.	6.3	6.	.3	.22	.34	.32	.02	.80	.66	.14	.036	.56	3.2	17.	21.	—	17,750
569	" 25	" 26	M.	VS.	....	"	341.	296.	45.	29.	7.6	6.	1.6	.16	.33	.31	.02	.82	.64	.18	.026	.57	2.7	19.	24.	+	47,500
571	Nov. 1	Nov. 3	H.	S.	....	"	352.	258.	94.	27.	8.6	6.7	1.9	.30	.36	.28	.08	.36	.02	.34	.08	.72	3.4	18.	10.	+	28,000
573	" 8	" 10	M.	VS.	....	"	342.	315.	27.	39.	6.6	5.9	.7	.56	.38	.33	.05	.78	.68	.10	.05	1.45	5.4	9.	17.	+	5,000
576	" 15	" 16	VH.	VS.	....	"	350.	302.	48.	43.	12.8	6.4	6.4	.15	.88	.31	.57	2.06	.74	1.32	.13	.....	6.2	10.	14.	......	....
578	" 22	" 23	H.	VS.	....	"	386.	301.	85.	31.5	11.	5.7	5.3	.08	.72	.28	.44	1.42	.48	.94	.06	2.42	6.	13.	17.	+	40,250
580	" 29	Dec. 1	MH.	S.	....	"	344.	301.	43.	27.5	8.	6.3	1.7	.96	.72	.52	.20	.72	.56	.16	.....	.....	5.9	8.	12.	+	17,500

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 180.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, GRAFTON, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE.
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: BySuspd Matter	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
515	July 5	July 7	VII.	H.	.7	None	319.	146.	173.	1.2	20.	13.8	6.2	.02	.56	.36	.20	1.16	.84	.32	.....	.....	14.6	26.	28.	+	9.500
517	" 12	" 13	VII.	H.	.25	"	543.	154.	389.	.8	22.8	11.4	11.4	.04	.72	.30	.42	1.36	.48	.88	.....	1.00	13.2	27.	32.	+	38.700
519	" 19	" 20	H.	M.	.3	"	307.	191.	113.	1.3	11.8	11.4	3.4	.04	.42	.28	.14	.88	.64	.24	.....	.20	9.7	28.	36.	+	42.000
521	" 26	" 27	H.	M.	.3	"	586.	175.	411.	2.2	13.	10.1	2.9	.12	.40	.30	.10	.80	.72	.08	.0	.80	7.6	30.	37.	—	11.500
523	Aug. 2	Aug. 3	M.	M.	.3	"	248.	173.	75.	2.3	11.6	9.5	2.1	.01	......	......	......	.92	...	....	.....	.40	6.1	28.	37.	—	25.750
525	" 9	" 10	VII.	H.	.2	"	437.	173.	264.	2.5	12.6	7.3	5.3	.04	.50	.24	.26	1.04	.38	.66	.002	.30	7.6	26.	28.	—	50.000
552	" 16	" 17	VII.	S.	....	"	319.	180.	139.	2.5	12.	6.5	5.5	.04	.46	.20	.26	.70	.36	.34	.....	.70	6.	27.	29.	+	20.000
554	" 21	" 24	M.	M.	....	"	237.	165.	72.	2.8	9.9	7.4	2.5	.02	.34	.21	.13	.64	.32	.32	.....	.0	4.2	26.	31.	+	19.425
556	" 30	" 31	M.	M.	....	"	237.	185	52.	3.6	....	7.	...	......	.36	.24	.12	.68	.36	.32	.0	.30	3.3	28.	31.	+	43.500
558	Sept. 6	Sept. 7	M.	M.	....	"	258.	196.	62.	4.8	8.9	6.6	2.3	.05	.35	.19	.16	.50	.36	.14	.....	.....	3.4	30.	36.	—	23.000
560	" 13	" 14	M.	M.	....	"	283.	168.	115.	2.9	11.2	6.5	4.7	......	.46	.21	.25	.80	.40	.40	.....	.20	4.4	23.	22.	+	32.000
562	" 20	" 21	M.	M.	......	"	275.	161.	114.	2.8	12.	8.2	3.8	......	.41	.23	.21	.84	.52	.32	.017	.19	4.8	20.	19.	+	31.350
564	" 27	" 28	M.	M.	....	"	242.	144.	98.	2.5	12.8	8.7	4.1	.016	.50	.25	.25	.88	.40	.48	.....	.....	4.1	18.	20.	+	20.250
566	Oct. 4	Oct. 5	M.	S.	....	"	229.	148.	81.	2.4	13.6	9.2	4.4	......	.44	.25	.19	.76	.38	.38	.....	.....	......	18.	20.	+	17,250
568	" 11	" 12	M.	S.	....	"	243.	171.	72.	3.1	12.6	9.6	3.	......	.40	.30	.10	.82	.42	.40	.....	.08	3.2	16.	21.	+	23.350
570	" 25	" 26	M.	S.	....	"	247.	166.	81	3.	11.4	8.2	3.2	......	.36	.21	.15	.66	.38	.28	.004	.....	2.7	18.	24	+	13.650
572	Nov. 1	Nov. 3	M.	M.	....	"	241.	162.	79	3.4	10.8	7.8	3.	.04	.36	.19	.17	.66	.34	.32	.007	.0	3.4	16.5	10.	+	18.500
574	" 8	" 10	M.	M.	....	"	229.	149.	80.	2.8	12.	9.4	2.6	.04	.47	.29	.18	.74	.40	.34	.....	.0	5.4	9.	17.	+	11.250
577	" 15	" 16	M.	S.	....	"	219.	137.	82.	2.8	17.4	15.	2.4	.032	.42	.30	.12	.88	.70	.18	.0	.0	6.2	10.	14.	.....	....
579	" 22	" 23	M.	S.	....	"	241.	138.	103.	3.0	17.2	15.4	1.8	.04	.40	.29	.11	.76	.42	.34	.0	.0	6.	12.	17.	+	29,000
581	" 29	Dec. 1	MS.	VS.	....	"	184.	142.	42.	2.6	15.8	11.4	1.4	.03	.36	.28	.08	.58	.40	.18	.....	.....	5.9	7.	12.	+	8,250

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 181.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 FEET FROM ILLINOIS SHORE, ALTON, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
704	July 5	July 7	VII.	H.	.7	None	285.	171.	114.	3.3	15.6	13.	2.6	.03	.44	.30	.14	.80	.56	.24	.....	.....	15.3	26.	27.	+	30,000
709	" 12	" 13	VII.	H.	.25	"	334.	200.	134.	3.4	16.8	12.2	4.6	.08	.50	.30	.20	.92	.56	.36	.028	.67	15.8	29.	28.	+	37,350
714	" 19	" 20	H.	H.	.15	"	291.	224.	67.	4.7	12.4	10.2	2.2	.02	.40	.28	.12	.84	.54	.30	.015	.38	12.2	28.	31.	+	92,000
719	" 26	" 27	H.	H.	.25	"	321.	239.	82.	10.7	10.2	7.8	2.2	.04	.36	.28	.08	.72	.40	.32	.035	1.07	9.	30.	34.	+	17,650
724	Aug. 2	Aug. 3	M.	M.	.3	"	295.	242.	53.	16.3	9.4	7.8	1.6	.04	.80	.32	.48	.88	.60	.28	.044	1.36	7.2	29.	32.	—	6,500
729	" 9	" 10	M.	VH.	.15	"	622.	219.	403.	13.1	14.8	6.2	8.6	.06	.50	.28	.22	1.28	.42	.86	.07	1.03	7.	26.	28.	—	38,000
739	" 23	" 24	M.	M.	....	"	264.	196.	68.	6.4	10.2	7.3	2.9	......	.37	.28	.09	.68	.30	.38	.014	.0	4.3	28.	32.	+	24,750
744	" 30	" 31	S.	M.	....	"	269.	209.	60.	8.6	10.	7.1	2.9	.03	.38	.25	.13	.76	.40	.36	.015	.19	3.1	28.	28.	+	88,000
753	Sept. 6	Sept. 7	M.	M.	....	"	......	......	......	5.7	9.	6.8	2.2	......	.34	.23	.11	.48	.30	.18	.013	.20	2.9	30.	29.	—	30,000
754	" 13	" 14	M.	M.	....	"	270.	190.	80.	6.	9.6	6.8	2.8	......	.44	.24	.20	.88	.34	.54	.....	.26	3.6	24.	22.	+	34,750
759	" 20	" 21	M.	M.	....	"	309.	214.	95.	10.2	10.4	6.5	3.9	.08	.44	.28	.16	.84	.56	.28	.016	.19	4.	20.	20.	+	52,000
764	" 27	" 29	M.	M.	....	"	245.	167.	78.	7.3	11.6	8.2	3.4	.06	.46	.24	.22	.80	.58	.22	.013	.19	3.8	18.	19.	+	30,350
769	Oct. 4	Oct. 5	M.	M.	....	"	234.	173.	61.	6.	11.8	8.6	3.2	......	.44	.24	.20	1.02	.48	.54	.008	.....	2.8	15.	16.	+	7,000
774	" 11	" 12	M.	M.	....	"	255.	194.	61.	7.	11.4	8.8	2.6	.04	.36	.25	.11	1.26	.42	.84	.012	.19	2.2	16.	17.	+	18,750
779	" 18	" 20	M.	M.	....	"	267.	206.	61.	11.4	10.4	8.5	1.9	.02	.44	......	......	.82	.38	.44	.008	.....	2.1	18.	20.	+	14,000
784	" 25	" 27	M.	M.	....	"	257.	190.	67.	9.5	10.8	8.	2.8	.06	.40	.25	15	.76	.50	.26	.0	.10	1.9	18.	19.	+	7,250
789	Nov. 1	Nov. 2	M.	M.	....	"	279.	185.	94.	11.2	10.4	7.8	2.6	.08	.32	.21	.11	.64	.32	.32	.02	.10	2.3	12.	10.	+	17,350
794	" 8	" 9	M.	M.	....	"	274.	208.	66.	11.8	10.2	8.	2.2	.13	.38	.25	.13	.96	.44	.52	.018	.20	3.9	9.	12.	+	10,250
1051	" 15	" 16	M.	S.	....	"	254.	185.	69.	12.1	15.2	11.6	3.6	.06	.66	.28	.38	1.18	.62	.56	.038	.52	5.4	10.	13.	......	....
1056	" 22	" 23	M.	S.	....	"	280.	208.	72.	15.2	15.4	15.2	.2	.08	.74	.31	.43	1.16	.70	.46	.04	.56	4.7	13.	14.	+	26,000
....	....	....	....	....	....	....	......	......	......	......	....	....	....	......	......	......	......	....	....	....	......	......	......	......	......	......	....

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 182.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, ONE-FOURTH DISTANCE FROM ILLINOIS SHORE, ALTON, ILL.

Report of ADOLPH GEHRMANN.
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
705	July 5	July 7	VH.	H.	.8	None	258.	160.	98.	1.9	17.6	14.6	3.	.04	.40	.33	.07	.80	.56	.24	.....	.....	15.3	26.	27.	+	26.350
710	" ..	" ..	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.8	29.	28.	+	28.500
715	" 19	" 20	H.	H.	.15	None	268.	190.	78.	2.4	15.2	10.8	4.4	.03	.40	.30	.10	.76	.54	.22	.003	.39	12.2	28.	31.	+	85.000
720	" 26	" 27	H.	H.	.3	"	302.	190.	112.	5.8	12.	8.8	3.2	.03	.40	.28	.12	.68	.44	.24	.013	.94	9.	30.	34.	+	15,250
725	Aug. 2	Aug. 3	M.	M.	.3	"	238.	191.	41.	6.4	10.6	8.6	2.0	.02	.57	.34	.23	.72	.48	.24	.022	.68	7.2	29.	32.	–	7,750
730	" 9	" 10	M.	H.	.15	"	433.	204.	229.	8.2	12.8	6.6	6.2	.06	.43	.28	.15	.96	.40	.56	.055	.85	7.	26.	28.	–	24.635
735	" 16	" 17	VH.	H.	....	"	310.	152.	158.	2.9	11.8	7.2	4.6	.04	.40	.23	.17	.73	.28	.45	.015	.49	7.2	26.	30.	—	14.000
740	" 23	" 24	M.	M.	....	"	257.	184.	73.	5.6	10.1	6.9	3.5	......	.35	.21	.11	.68	.28	.40	012	.0	4.3	28.	32.	+	12,666
745	" 30	" 31	S.	M.	....	"	266.	213.	53.	5.8	10.4	7.1	3.3	.03	.36	.23	.13	.72	.36	.36	.012	.09	3.1	28.	28.	+	56.650
752	Sept. 6	Sept. 7	M.	M.	....	"	262.	197.	65.	5.1	9.2	6.8	2.4	.....	.39	.24	.15	.41	.31	.10	.01	.10	2.9	30.	29.	—	44,000
755	" 13	" 14	M.	M.	....	"	278.	193.	85.	5.5	10.2	6.8	3.4	......	.44	.23	.21	.90	.44	.46	.....	.20	3.6	24.	22.	+	36.000
760	" 20	" 21	M.	M.	....	"	290.	208.	87.	5.9	10.8	7.2	3.6	......	.44	.27	.17	.90	.36	.54	.012	.39	4.	20.	20.	+	29.500
765	" 27	" 28	M.	M.	....	"	241.	159.	82.	5.7	11.8	8.9	2.9	.016	.46	.23	.23	.88	.44	.44	.01	.15	3.8	18.	19.	+	26,750
770	Oct. 4	Oct. 5	M.	M.	....	"	238.	170.	68.	5.	12.	8.8	3.2	.08	.44	.28	.16	1.04	.38	.66	.01	....	2.8	15.	16.	-	15.000
775	" 11	" 12	M.	M.	....	"	256.	186.	70.	6.5	11.6	8.9	2.7	.02	.39	.24	.15	.91	.48	.46	.016	.09	2.2	16.	17.	+	23,000
780	" 18	" 20	M.	M.	....	"	273.	197.	76.	9.8	11.2	8.4	2.8	.01	.48	.27	.21	.91	.40	.51	.008	....	2.1	18.	19.	+	17.350
785	" 25	" 27	M.	M.	....	"	257.	180.	77.	8.3	11.4	8.	3.4	.028	.38	.24	.14	.78	.48	.30	.....	.10	1.9	18.	19.	+	11,000
790	Nov. 1	Nov. 2	M.	M.	....	"	269.	177.	92.	9.	10.8	7.6	3.2	.04	.32	32	......	.66	.32	.34	.015	.10	2.3	12	10.	+	17,000
795	" 8	" 9	M.	M.	....	"	258.	190.	68.	8.3	10.8	8.2	2.6	.08	.39	.28	.11	.88	.44	.44	.007	.0	3.9	9.	12.	+	6,750
1052	" 15	" 16	M.	S.	......	"	234.	163.	71.	7.6	15.8	12.8	3.	.018	.54	.28	.26	.91	.54	.10	.02	.....	5.4	10.	13.	......	....
1059	" 22	" 23	M.	S.	......	"	212.	176.	66.	10.	16.	12.6	3.4	.02	.54	.29	.25	.96	.68	.28	.02	.38	4.7	13.	14.	+	21.000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 183.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, ALTON, ILL.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
															Albuminoid Am												
	1899 Collection.	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved	By Suspd Matter.	Free Ammonia.	Tot'l	Dissolv'd	Suspnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
706	July 5	July 7	VH.	H.	.8	None	318.	161.	157.	1.3	18.8	14.4	4.4	.04	.48	.33	.15	.88	.58	.30	.....	.....	15.3	26.	27.	—	34,750
711	" 12	" 13	VH.	VH.	.25	"	595.	172.	423.	1.4	24.8	11.8	13.	.06	.76	.28	.48	1.32	.54	.78	.006	.90	15.8	29.	28.	—	19,000
716	" 19	" 20	VH.	H.	.2	"	290.	183.	107.	1.7	16.	10.8	5.2	.02	.42	.28	.14	.76	.52	.24	.003	.30	12.2	28.	31.	—	66,500
721	" 26	" 27	H.	H.	.3	"	304.	188.	116.	2.4	13.4	9.2	4.2	.03	.42	.28	.14	.66	.36	.30	.005	.65	9.	30.	34.	+	23.000
726	Aug. 2	Aug. 3	M.	M.	.3	"	231.	170.	61.	2.3	11.	8.2	2.8	.01	.53	.34	.19	.78	.40	.38	.004	.40	7.2	29.	32.	—	6,250
731	" 9	" 10	M.	M.	.15	"	305.	182.	123.	3.6	11.2	7.7	3.5	.06	.40	.26	.14	.70	.38	.32	.01	.33	7.	26.	28.	—	33.000
741	" 23	" 24	M.	M.	....	"	244.	162.	82.	3.7	10.4	7.3	3.1	......	.41	.26	.15	.68	.28	.40	.005	.0	4.3	28.	32.	+	19.666
746	" 30	" 31	S.	M.	....	"	260.	189.	71.	4.4	10.	7.3	2.7	.016	.37	.25	.12	.68	.38	.30	.006	.04	3.1	28.	28.	+	84.650
751	Sept. 6	Sept. 7	M.	M.	....	"	256.	193.	63.	3.9	9.6	6.8	2.8	......	.39	.23	.16	.48	.30	.18	.006	.10	2.9	30.	29.	—	12.000
756	" 13	" 14	M.	M.	....	"	276.	169.	107.	4.	10.2	7.	3.2	......	.48	.23	.25	.86	.42	.44	.....	.20	3.6	24.	22.	+	51,000
761	" 20	" 21	M.	M.	....	"	288.	183.	105.	5.7	10.8	7.7	3.1	......	.46	.27	.19	.84	.50	.34	.007	.10	4.	20.	20.	+	56,000
766	" 27	" 29	M.	M.	....	"	248.	148.	100.	3.7	12.4	8.9	3.5	.016	.46	.25	.21	.88	.46	.42	.006	.0	3.8	18.	19.	+	12,650
771	Oct. 4	Oct. 5	M.	M.	....	"	233.	158.	75.	3.8	12.6	8.9	3.7	......	.46	.26	.20	.86	.34	.52	.005	.....	2.8	15.	16.	+	7,350
776	" 11	" 12	M.	M.	....	"	250.	173.	77.	4.6	12.4	9.2	3.2	......	.39	.26	.13	1.14	.40	.74	.012	.07	2.2	16.	17.	+	9,000
781	" 18	" 20	M.	M.	....	"	273.	195.	78.	9.	11.2	8.6	2.6	......	.46	.28	.18	.78	.52	.26	.007	.....	2.1	18.	20.	+	11,750
786	" 25	" 27	M.	M.	....	"	257.	176.	81.	6.6	11.4	8.	3.4	.012	.40	.24	.16	.68	.42	.26	.....	.0	1.9	18.	19.	+	9.000
791	Nov. 1	Nov. 2	M.	M.	....	"	254.	173.	81.	7.8	11.	7.8	3.2	.02	.32	.32	......	.72	.32	.40	.013	.06	2.3	12.	10.	+	21.250
796	" 8	" 9	M.	M.	....	"	244.	164.	80.	3.6	11.4	9.2	2.2	.024	.37	.25	.12	.72	.38	.34	.....	.0	3.9	9.	12.	+	9,500
1053	" 15	" 16	M.	S.	....	"	223.	142.	81.	3.3	16.	11.2	1.8	.04	.44	.32	.12	.98	.54	.44	.004	.74	5.4	10.	13.	......	....
1058	" 22	" 23	M.	S.	....	"	205.	147.	58.	4.8	16.2	14.8	1.4	.02	.44	.28	.16	.84	.66	.18	.0	.34	4.7	13.	14.	+	14.750
....	....	.. ....	....	....	....	....	.....	.....	.....	.....	....	....	....	......	......	......	......	....	....	....	.....	.....	.....	.....	.....	.....	....

APPEARANCE—H., Heavy   VH., Very Heavy.   VVH., Very, Very Heavy.   S., Slight.   VS., Very Slight.   VVS., Very, Very Slight.   M., Medium.

TABLE 184.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ADOLPH GEHRMANN.
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

SOURCE OF WATER—MISSISSIPPI RIVER. ONE-FOURTH DISTANCE FROM MISSOURI SHORE.
ALTON, ILL.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. BySuspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter
707	July 5	July 7	VH.	H.	.75	None	361.	151.	210.	1.3	20.	13.8	6.2	.04	.52	.28	.24	.96	.60	.36	.....	.....	15.3	26.	27.	+	19,000
712	" 12	" 13	VH.	VH.	.2	"	626.	164.	462.	1.6	25.6	10.8	14.8	08	.88	.28	.60	1.40	.56	.84	.006	1.00	15.8	29.	28.	−	25,500
717	" 19	" 20	VH.	H.	.1	"	339.	180	159.	1.9	16 8	10.	6.8	.03	.50	.26	.24	.94	.60	.34	.003	.30	12.2	28.	31.	−	23,500
722	" 26	" 27	H.	H.	.3	"	320	170.	150.	2.4	....	8.8	....	.01	41	.26	.15	.68	.36	.32	.005	.80	9.	30.	31.	+	24,000
727	Aug. 2	Aug. 3	M.	M.	.3	"	225.	180.	45.	2.7	11.2	8.8	2.4	.01	.40	.26	.14	.72	.36	.36	.....	.40	7.2	29.	32.	−	3,250
732	" 9	" 10	M.	M.	.15	"	286.	178.	108.	2.7	11.	7.7	3.3	.06	.35	.24	.11	.70	.40	.30	.003	.30	7.	26.	28.		28,350
737	" 16	" 17	VH.	H.	....	"	301.	137.	164.	2.3	11.6	7.3	4.3	.04	.384	.23	.154	.68	.30	.38	.015	.59	7.2	26.	30.		15,333
742	" 23	" 24	M.	M.	....	"	239.	160.	79.	3.1	11.8	7.6	4.2	......	.40	.24	.16	.73	.24	.49	.....	.0	4.3	28	32.		14,000
747	" 30	" 31	S.	M.	....	"	215.	186.	59.	3.8	9.4	7.1	2.3	......	.37	.25	.12	.76	.44	.32	.....	.0	3.1	28.	28.	+	35,500
752	Sept. 6	Sept. 7	M.	M.	....	"	241.	185.	59.	3.5	9.2	6.8	2.4	......	.35	.21	.11	.44	.30	.11	.....	.20	2.9	30.	29.		20,000
757	" 13	" 14	M.	M.	....	"	263.	162.	101.	3.5	10.6	6.8	3.8	......	.42	.20	.22	.86	.36	.50	.....	.20	3.6	29.	22.		40,500
762	" 20	" 21	M.	M.	....	"	274.	162.	112.	3.1	11 6	7.8	3.8	......	.46	.24	.22	.88	.44	.44	.005	.20	4.	20.	20.	+	48,500
767	" 27	" 28	M.	M.	....	"	237.	145.	92.	2.6	12.6	9.	3.6	......	.48	.24	.24	.80	.42	.38	.006	.0	3.8	18.	19.	−	10,000
772	Oct. 4	Oct. 5	M.	M.	....	"	232.	156.	76.	2.4	13.	9.3	3.7	......	.44	.25	.19	.86	.32	.54	.....	.....	2.8	15.	16.	+	14,500
777	" 11	" 12	M.	M.	....	"	238.	162.	76.	3.4	12.4	9.3	3.1	......	.37	.26	.11	.90	.44	.46	.008	.0	2.2	16.	17.		12,500
782	" 18	" 20	M.	M.	....	"	269.	177.	92.	4.5	11.4	8.9	2.5	......	.15	.24	21	.86	.48	.38	.007	.....	2.1	18.	20.	+	17,500
787	" 25	" 27	M.	M.	....	"	219.	168.	81.	4.3	11.2	8.4	2.8	......	.38	25	.13	.66	.16	.20	.....	.0	1.9	18.	19.	+	8,000
792	Nov. 1	Nov. 2	M.	M.	....	"	242.	162.	80.	4.5	10.8	8.	2.8	.02	.36	24	.12	.66	.42	.21	.01	.0	2.3	12.	10.	−	22,750
797	" 8	" 9	M.	M.	....	"	237.	162.	75.	3.0	11.2	9.	2.2	......	.40	.25	.15	.72	.38	.31	.....	0	3.9	9.	10.	+	10,500
1054	" 15	" 16	M.	S.	....	"	239.	135.	101.	2.6	16.4	14.2	2.2	.04	.40	.32	08	.74	.58	.16	.....	.20	5.4	10.	13.	....	....
1057	" 22	" 23	M.	S.	....	"	202.	129.	73.	2.9	16.6	11 8	1.8	.02	.41	.28	.13	.68	.58	.10	.0	.26	4.7	13.	14.	+	19,500

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 185.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 FEET FROM MISSOURI SHORE, ALTON, ILL.

Report of ADOLPH GEHRMANN, D. B. BISBEE, Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dissolv'd	Nitrogen as Ammonia: Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
708	July 5	July 7	VH.	H.	.75	None	407.	141.	266.	1.8	21.6	13.2	8.4	.04	.52	.21	.31	.92	.52	.40	.....	.....	15.3	26.	27.	+	20.500
713	" 12	" 13	VH.	VH.	.2	"	568.	161.	407.	2.0	24.	11.	13.	.08	.76	.28	.48	1.36	.54	.82	.006	.90	15.8	29.	28.	—	18,000
718	" 19	" 20	VH.	H.	.1	"	301.	180.	121.	1.9	16.	10.	6.	.02	.42	.28	.14	.90	.64	.26	.002	1.60	12.2	28.	31.	+	62,000
723	" 26	" 27	H.	H.	.3	"	290.	169.	121.	2.6	12.6	8.6	4.	.12	.44	.32	.12	.78	.48	.30	.....	.70	9.	30.	34.	—	22,000
728	Aug. 2	Aug. 3	MH.	M.	.3	"	227.	167.	60.	2.6	10.6	9.	1.6	.01	.55	.24	.31	.78	.38	.40	.....	.40	7.2	29.	32.	—	19,000
733	" 9	" 10	M.	M.	.15	"	312.	163.	149.	2.9	11.6	7.9	3.7	.04	.40	.24	.16	.84	.44	.40	.003	.30	7.	26.	28.	+	13.000
743	" 23	" 24	M.	M.	....	"	228.	166.	62.	3.1	11.0	7.7	3.3	......	.40	.24	.16	.68	.26	.42	.....	.0	4.3	28.	32.	+	16.000
748	" 30	" 31	S.	M.	....	"	249.	189.	60.	4.0	9.	7.	2.	......	.35	.24	.11	.68	.38	.30	.....	.0	3.1	28.	28.	+	16,000
749	Sept. 6	Sept. 7	M.	M.	....	"	235.	187.	48.	3.7	9.2	6.9	2.3	......	.34	.22	.12	.50	.34	.16	.005	.16	2.9	30.	29.	—	32,600
758	" 13	" 14	M.	M.	....	"	240.	157.	83.	3.2	9.8	6.8	3.	......	.36	.20	.16	.78	.30	.48	.....	.20	3.6	24.	22.	+	23.500
763	" 20	" 21	M.	M.	....	"	247.	167.	80.	2.9	11.	7.8	3.2	......	.41	.25	.16	.84	.48	.36	.007	.10	4.	20.	20.	+	50.250
768	" 27	" 29	M.	M.	....	"	219.	155.	64.	2.8	12.2	8.7	3.5	......	.44	.24	.20	.72	.48	.24	.005	.0	3.8	18.	19.	+	12.350
773	Oct. 4	Oct. 5	M.	M.	....	"	213.	157.	56.	2.6	12.6	9.5	3.1	......	.42	.26	.16	.80	.32	.48	.....	.....	2.8	15.	16.	+	13.350
778	" 11	" 12	M.	M.	....	"	239.	162.	77.	3.3	12.4	9.2	3.2	......	.37	.25	.12	.82	.38	.44	.008	.0	2.2	16.	17.	—	11,000
783	" 18	" 20	M.	M.	....	"	233.	167.	66.	3.9	11.0	8.9	2.1	......	.47	.25	.22	.74	.48	.26	.006	.....	2.1	18.	20.	+	16.000
788	" 25	" 27	M.	M.	....	"	239.	157.	82.	3.7	11.4	8.8	2.6	......	.40	.24	.16	.74	.44	.30	.....	.0	1.9	18.	19.	+	8.350
793	Nov. 1	Nov. 2	M.	M.	....	"	237.	157.	80.	4.2	10.8	7.8	3.	......	.36	.26	.10	.68	.30	.38	.01	.0	2.3	12.	10.	+	19.500
798	" 8	" 9	M.	M.	....	"	183.	144.	39.	3.4	10.8	8.4	2.4	.04	.38	.25	.13	.68	.50	.18	.....	.0	3.9	9.	10.	+	9.000
1055	" 15	" 16	M.	S.	....	"	219.	143.	76.	2.3	16.2	14.2	2.	.04	.40	.32	.08	.66	.54	.12	.....	.10	5.4	10.	13.	......	....
1056	" 22	" 23	M.	S.	....	"	202.	129.	73.	2.9	16.6	14.8	1.8	.02	.41	.28	.13	.68	.58	.10	.0	.26	4.7	13.	14.	+	23.000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 186

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ADOLPH GEHRMANN, D. B. BISBEE, Municipal Laboratory, Chicago, Ill.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 YARDS FROM ILLINOIS SHORE, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dis-solved.	Residue on Evaporation: Sus-pended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dis-solved	Oxygen Consumed: By Suspd Matter.	Nitrogen as Ammonia: Free Am-monia.	Nitrogen as Ammonia: Albuminoid Am: Tot'l	Nitrogen as Ammonia: Albuminoid Am: Dis-solv'd	Nitrogen as Ammonia: Albuminoid Am: Sus-pnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dis-solved.	Organic Nitrogen: Sus-pended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
657	July 6	July 7	VVH.	VVH.	.2	None	1822.	195.	1627.	4.0	31.6	9.8	21.8	.04	.94	.32	.62	1.88	.52	1.36	.....	.....	.....	.....	.....	+	21,350
658	" 13	" 14	VVH.	VVH.	.05	"	2184.	166.	2018.	3.6	17.6	8.8	38.8	.07	1.70	.20	1.50	2.88	.54	2.34	.003	1.50	23.9	27.	35.	+	10,500
659	" 20	" 21	VVH.	VVH.	.05	"	2083.	187.	1896.	4.	32.4	6.9	25.5	.10	1.05	.17	.88	2.20	.32	1.88	.....	.30	20.6	26.	27.	+	19,000
660	" 27	" 28	VVH.	VVH.	.05	"	1540.	194.	1346.	4.9	23.6	6.4	17.2	.02	.77	.19	.58	1.68	.26	1.42	.004	.60	16.6	29.	36.	+	9,350
661	Aug. 3	Aug. 4	VVH.	VVH.	.1	"	2066.	212.	1854.	5.2	26.	5.5	20.5	.02	.90	.20	.70	2.08	.20	1.88	.0	.40	14.3	29.	37.	+	7,750
662	" 10	" 11	VVH.	VVH.	.05	"	2656.	194.	2462.	5.8	15.	6.2	8.8	.04	.30	.21	.09	1.40	.52	.88	.028	.58	12.9	26.	29.	+	29,250
663	" 17	" 18	VVH.	VH.	....	"	1333.	174.	1159.	5.3	22.	5.3	16.7	.04	.70	.17	.53	1.58	.22	1.36	.001	.75	13.9	27.	32.	......	....
664	" 24	" 25	VVH.	VVH.	....	"	814.	179.	665.	5.8	18.4	6.	12.4	.02	.61	.31	.30	1.28	.40	.88	.009	.39	9.7	27.	32.	+	17,700
665	" 31	Sept. 1	VVH.	VH.	....	"	831.	214.	617.	6.3	11.	4.8	9.2	.....	.43	.18	.25	....	.40	....	.004	.60	7.5	27.	32.	—	17,000
666	Sept. 7	" 8	VVH.	VH.	....	"	581.	214.	367.	......	12.4	6.1	6.3	.02	.42	.17	.25	.94	.24	.70	.....	.....	6.6	29.	38.	......	....
667	" 14	" 15	VVH.	VH.	....	"	328.	183.	145.	4.8	10.8	7.	3.8	......	.45	.21	.24	1.12	.60	.52	.....	.....	6.6	22.	24.	+	47,350
668	" 21	" 22	VVH.	M.	....	"	327.	197.	130.	7.1	11.8	7.2	4.6	.02	.48	.27	.21	1.00	.48	.52	.001	.60	6.6	19.	20.	—	25,750
669	" 28	" 29	VVH.	M.	....	"	309.	164.	145.	5.4	11.8	7.8	4.	......	.46	.24	.22	.86	.42	.44	.026	.....	5.3	16.	18.	+	16,000
670	Oct. 5	Oct. 6	VVH.	M.	....	"	261.	161.	100.	4.1	12.1	6.6	5.8	......	.49	.30	.19	.78	.40	.38	.....	.....	4.5	15.	21.	+	6,250
671	" 12	" 13	VVH.	M.	....	"	309.	182.	127.	6.	12.4	7.9	4.5	......	.47	.25	.22	.86	.30	.56	.....	.40	3.5	17.	......	+	60,000
672	" 20	" 23	VVH.	H.	....	"	312.	201.	111.	8.6	11.0	8.2	2.8	.....	.42	.27	.15	.78	.74	.04	.....	....	3.3	17.	18.	......	....
673	" 26	" 28	VVH.	M.	....	"	309.	183.	126.	7.6	10.4	6.	4.4	.016	.32	.14	.18	.80	.32	.48	.....	.....	3.	17.	19.	+	13,650
674	Nov. 2	Nov. 3	VVH.	M.	....	"	322.	186.	136.	8.6	10.1	7.	3.4	.01	.34	.20	.14	.86	....	....	.013	.0	3.9	9.	2.	+	8,500
675	" 13	" 14	VVH.	M.	....	"	....	......	......	6.4	....	....	....	.032	.48	.30	.18	....	....	....	.01	.....	6.2	9.	14.	—	12,000
1129	" 23	" 24	VVH.	VH.	....	"	319	192.	157.	10.5	16.2	12.2	4.	.03	.50	.25	.25	1.16	.38	.78	.01	.40	6.2	11.	......	+	60,750
1133	" 30	Dec. 1	MH.	MS.	....	"	226	172.	51.	8.1	14.0	12.2	1.8	.22	.36	.28	.08	....	.86	....	.012	.59	5.5	8.	17.	—	14,250

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 187.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, AT CHAIN OF ROCKS, PUMPING STATION ST. LOUIS WATER WORKS.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	Date of: 1899 Examination.	Appearance: Turb'y.	Appearance: Sediment.	Appearance: Color.	Odor	Residue on Evaporation: Total.	Residue on Evaporation: Dissolved.	Residue on Evaporation: Suspended	Chlorine.	Oxygen Consumed: Total.	Oxygen Consumed: By Dissolved.	Oxygen Consumed: BySuspd Matter.	Nitrogen as Ammonia: FreeAmmonia.	Albuminoid Am: Tot'l	Albuminoid Am: Dissolv'd	Albuminoid Am: Suspnd'd	Organic Nitrogen: Total.	Organic Nitrogen: Dissolved.	Organic Nitrogen: Suspended	Nitrogen as: Nitrites	Nitrogen as: Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
632	July 6	July 7	VVH.	VVH.	.2	None	2456.	196.	2260.	4.1	35.6	8.	27.6	.04	1.20	.30	.90	2.48	.48	2.00	.....	.....	22.6	26.	27.	+	45,000
633	" 13	" 14	VVH.	VVH.	.05	"	2664.	172.	2492.	4.	50.8	8.	42.8	.08	1.70	.20	1.50	3.28	.48	2.80	.003	1.90	23.9	27.	35.	—	53,650
634	" 20	" 21	VVH.	VVH.	.05	"	2562.	188.	2374.	4.6	35.6	6.3	29.3	.10	.97	.16	.81	2.28	.30	1.98	.....	.30	20.6	26.	27.	+	25,000
635	" 27	" 28	VVH.	VVH.	.05	"	2163.	189.	1974.	5.	29.2	5.4	23.8	.16	.85	.16	.69	1.88	.22	1.66	.011	.35	16.6	29.	36.	+	9,350
636	Aug. 3	Aug. 4	VVH.	VVH.	.1	"	2462.	210.	2252.	5.4	29.5	4.9	24.6	.02	1.00	.20	.80	2.16	.20	1.96	.....	.40	14.3	29.	37.	—	2,309,500
637	" 10	" 11	VVH.	VVH.	.05	"	1945.	182.	1763.	4.4	24.	5.2	18.8	.04	.80	.16	.64	1.88	.42	1.46	.009	.40	12.9	26.	29.	+	28,000
638	" 17	" 18	VVH.	VVH.	....	"	1869.	155.	1714.	5.5	26.4	4.9	21.5	.04	.80	.16	.64	1.60	.18	1.42	.002	.60	13.9	27.	32.	+	....
639	" 24	" 25	VVH.	VVH.	....	"	1315.	182.	1133.	5.9	26.	4.7	21.3	.02	.93	.164	.766	1.74	.32	1.42	.010	.49	9.7	27.	32.	—	26,666
640	" 31	Sept. 1	VVH.	VVH.	....	"	1028.	219.	809.	6.6	15.6	5.5	10.1	......	.58	.16	.42	1.08	.44	.64	.004	.40	7.5	27.	32.	+	8,000
641	Sept. 7	" 8	VVH.	VVH.	....	"	831.	258.	573.	7.	14.8	5.7	9.1	.02	.48	.14	.34	1.10	.22	.88	.....	.....	6.6	29.	38.	+	40,650
642	" 14	" 15	VVH.	VH.	....	"	851.	224.	627.	7.9	13.4	5.	8.4	......	.48	.15	.33	1.34	.50	.84	.....	.....	6.6	22.	24.	+	24,000
643	" 21	" 22	VVH.	VH.	....	"	747.	234.	513.	8.8	11.8	5.	6.8	.02	.42	.16	.26	.96	.28	.68	.0	.40	6.6	19.	20.	+	33,500
644	" 28	" 29	VVH.	VH.	....	"	378.	230.	148.	9.7	11.2	5.	6.2	......	.45	.15	.30	.82	.30	.52	.017	.....	5.3	16.	18.	—	19,500
645	Oct. 5	Oct. 6	VVH.	VH.	....	"	702.	256.	446.	12.4	11.	4.9	6.1	......	.40	.14	.26	.86	.24	.62	.....	.....	4.5	15.	21.	+	14,500
646	" 12	" 13	VVH.	H.	....	"	661.	276.	385.	12.4	10.	4.1	5.9	......	.37	.15	.22	.86	.22	.64	.....	.50	3.5	17.	22.	+	25,000
647	" 20	" 23	VVH.	VH.	....	"	595.	274.	321.	14.3	9.2	4.6	4.6	......	.41	.16	.25	.78	.44	.34	.....	.....	3.3	17.	18.	......	....
648	" 26	" 28	VVH.	VH.	....	"	613.	274.	339.	14.2	8.4	4.3	4.1	......	.28	.14	.14	.74	.20	.54	.....	.....	3.	17.	19.	+	30,350
649	Nov. 2	Nov. 3	VVH.	VH.	....	"	649.	265.	384.	13.8	9.	3.6	5.4	......	.30	.10	.20	.78	.24	.54	.006	.0	3.9	9.	2.	+	34,750
650	" 13	" 14	VVH.	M.	....	"	......	......	......	13.2	....	...	....	.02	.33	.19	.14	....	....	....	.003	.....	6.2	9.	14.	+	18,750
1128	" 23	" 24	VVH.	VH.	....	"	623.	249.	374.	10.6	13.4	7.3	6.1	.02	.36	.13	.23	.88	.26	.62	.....	.26	6.2	11.	10.	+	35,000
1132	" 30	Dec. 1	VVH.	H.	....	"	566.	256.	310.	13.	10.8	6.	4.8	.03	.32	.13	.19	.76	.32	.44	.004	.30	5.5	8.	17.	+	68,250

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 188.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

SOURCE OF WATER—MISSISSIPPI RIVER, AT CHAIN OF ROCKS, INLET TOWER.
ST. LOUIS WATER WORKS.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am Tot'l	Nitrogen as Ammonia. Albuminoid Am Dissolv'd	Nitrogen as Ammonia. Albuminoid Am Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
607	July 6	July 7	VVH.	VVH.	.1	None	2687.	210.	2477.	4.4	37.6	8.2	29.4	.04	1.30	.22	1.08	2.88	.48	2.40	.....	.....	22.6	26.	27.	+	35,000
608	" 13	" 14	VVH.	VVH.	.05	"	3115.	185.	2930.	4.1	54.4	7.4	47.	.08	1.95	.18	1.77	3.68	.46	3.22	.003	1.90	23.9	27.	35.	+	46,000
609	" 20	" 21	VVH.	VVH.	.05	"	2651.	195.	2456.	4.9	37.2	6.	31.2	.10	1.17	.16	1.01	3.08	.30	2.78	.....	.30	20.6	26.	27.	+	22,350
610	" 27	" 28	VVH.	VVH.	.05	"	2502.	214.	2288.	4.7	32.	5.2	26.8	.16	1.00	.16	.84	2.16	.20	1.96	.008	.50	16.6	29.	36.	+	11,650
611	Aug. 3	Aug. 4	VVH.	VVH.	.1	"	2616.	211.	2405.	5.4	30.	4.5	25.5	.02	1.10	.19	.91	2.28	.20	2.08	.003	.40	14.3	29.	37.	—	13,750
612	" 10	" 11	VVH.	VVH.	.05	"	2378.	189.	2189.	4.9	26.4	4.4	22.	.04	.90	.12	.78	2.08	.34	1.74	.003	.40	12.9	26.	29.	+	27,000
613	" 17	" 18	VVH	VVH.	....	"	2107.	187.	1920.	6.8	29.5	4.5	25.	.04	1.00	.14	.86	2.08	.13	1.95	.004	.70	13.9	27.	32.	......	....
614	" 24	" 25	VVH.	VVH.	....	"	1558.	188.	1370.	6.6	30.	4.2	25.8	.02	1.10	.14	.96	2.04	.36	1.68	.006	.50	9.7	27.	32.	+	27,323
615	" 31	Sept. 1	VVH.	VVH.	....	"	1173.	212.	961.	7.4	17.6	4.1	13.5	......	.63	.12	.51	1.08	.30	.78	.004	.50	7.5	27.	32.	+	19,000
616	Sept. 7	" 8	VVH.	VVH.	....	"	1072.	232.	840.	8.	16.4	4.4	12.	.02	.48	.13	.35	1.06	.24	....	.....	.....	6.6	29.	38.	+	50,500
617	" 14	" 15	VVH.	VVH.	....	"	1019.	239.	780.	9.6	13.8	4.5	9.3	......	.18	.13	.35	1.18	.44	.74	.....	.....	6.6	22.	21.	+	47,500
618	" 21	" 22	VVH.	VVH.	....	"	896.	219.	617.	10.6	12.	3.9	8.1	.02	.42	.12	.30	1.00	.24	.76	.0	.40	6.6	19.	20.	+	31,250
619	" 28	" 29	VVH.	VVH.	....	"	787.	217.	540.	11.3	11.	4.2	6.8	......	.40	.13	.27	.94	.32	.62	.017	.....	5.3	16.	18.	—	21,750
620	Oct. 5	Oct. 6	VVH.	VH.	....	"	757.	269.	488.	13.2	11.	3.8	7.2	......	.39	.13	.26	.90	.20	.70	.....	.....	4.5	15.	21.	+	11,600
621	" 12	" 13	VVH.	VH.	....	"	691.	285.	406.	13.8	9.8	3.5	6.3	......	.36	.12	.24	.88	.30	.58	.....	.....	3.5	17.	22.	+	24,600
622	" 20	" 23	VVH.	VH.	....	"	661.	295.	366.	15.8	8.6	3.4	5.2	......	.35	.18	17	.68	.38	.30	.....	.....	3.3	17.	18.	.....	....
623	" 26	" 28	VVH.	VH.	....	"	581.	291.	290.	16.	8.8	3.3	5.5	......	.28	.09	19	.70	.20	50	.....	.....	3.	17.	19.	+	20,750
624	Nov. 2	Nov. 3	VVH.	VH.	....	"	654.	266.	388.	11.2	9.4	3.5	5.9	.02	.30	.10	.20	.78	.22	.56	.006	.....	3.9	9.	2.	+	22,500
625	" 13	" 14	VVH.	M.	....	"	......	......	......	16.4	....	....	....	....	.25	.16	.09	....	....	....	.007	.....	6.2	9.	14.	+	10,250
1127	" 23	" 24	VVH.	VH.	....	"	688.	236.	452.	12.	12.2	6.3	5.9	.02	.37	.12	.25	.90	.36	51	.003	.20	6.2	11.	10.	+	50,000
1131	" 30	Dec. 1	VVH.	H.	....	"	632.	282.	350.	14.4	9.4	1.7	4.7	.021	.32	.13	.19	.72	.30	.42	.001	.10	5.5	8.	17.	+	....

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 189

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

SOURCE OF WATER—MISSISSIPPI RIVER, 400 FEET FROM MISSOURI SHORE, AT CHAIN OF ROCKS.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
	1899 Collection.	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved.	By Suspd Matter.	Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Suspnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
532	July 6	July 7	VVH.	VVH.	.1	None	3024.	214.	2810.	4.8	38.4	7.4	31.	.04	1.20	.20	1.00	2.88	.66	2.22	.....	.....	22.6	26.	......	—	43,650
533	" 13	" 14	VVH.	VVH.	.05	"	3303.	184.	3119.	4.4	58.	6.6	51.4	.09	2.10	.18	1.92	3.78	.44	3.34	.003	1.90	23.9	27.	35.	+	48,650
534	" 20	" 21	VVH.	VVH.	.05	"	2942.	199.	2743.	5.1	38.4	5.1	33.3	.10	1.20	.14	1.06	2.68	.24	2.44	.....	.40	20.6	26.	27.	+	23,000
535	" 27	" 28	VVH.	VVH.	.05	"	2576.	200.	2376.	5.2	36.4	4.6	31.8	.12	1.00	.16	.84	2.28	.20	2.08	.008	.35	16.6	29.	36.	+	14,350
536	Aug. 3	Aug. 4	VVH.	VVH.	.1	"	2802.	210.	2592.	5.4	30.5	3.8	26.7	.02	1.05	.20	.85	2.36	.20	2.16	.0	.80	14.3	29.	37.	+	17,750
537	" 10	" 11	VVH.	VVH.	.05	"	2656.	194.	2462.	5.2	28.4	3.5	24.9	.04	.90	.12	.78	2.40	.26	2.14	.003	.50	12.9	26.	29.	+	21,500
538	" 17	" 18	VVH.	VVH.	....	"	2388.	187.	2201.	7.2	33.2	4.	29.2	.04	1.05	.15	.90	2.20	.10	2.10	.004	.90	13.9	27.	32.	......	....
539	" 24	" 25	VVH.	VVH.	....	"	1662.	194.	1468.	6.9	30.8	4.1	26.7	.02	1.10	.13	.97	2.28	.30	1.98	.005	.60	9.7	27.	32.	—	50,000
540	" 31	Sept. 1	VVH.	VVH.	....	"	1241.	209.	1032.	7.4	18.2	3.9	14.3	......	.63	.09	.54	1.28	.28	1.00	.004	.70	7.5	27.	32.	—	15,000
541	Sept. 7	" 8	VVH.	VVH.	....	"	1064.	236.	828.	8.	16.8	4.6	12.2	.02	.48	.13	.35	.96	.26	.70	.....	.....	6.6	29.	38.	—	30,000
542	" 14	" 15	VVH.	VVH.	....	"	1107.	258.	849.	10.8	15.2	4.3	10.9	......	.50	.16	.34	1.30	.50	.80	.....	.....	6.6	22.	24.	+	82,350
543	" 21	" 22	VVH.	VVH.	....	"	1009.	268.	741.	12.1	12.8	3.8	9.0	.02	.42	.11	.31	.80	.24	.56	.0	.60	6.6	19.	20.	+	33,000
544	" 28	" 29	VVH.	VH.	....	"	831.	262.	569.	11.6	11.	4.1	6.9	......	.45	.12	.33	.94	.26	.68	.....	.....	5.3	16.	18.	—	24,000
545	Oct. 5	Oct. 6	VVH.	VH.	....	"	794.	275.	519.	13.9	11.6	3.8	7.8	......	.39	.13	.26	.82	.30	.52	.....	.....	4.5	15.	21.	+	11,750
546	" 12	" 13	VVH.	VH.	....	"	727.	304.	423.	14.7	9.6	2.9	6.7	.04	.36	.12	.24	.82	.28	.54	.....	.40	3.5	17.	22.	+	24,500
547	" 20	" 23	VVH.	VH.	....	"	696.	313.	383.	17.2	8.6	3.1	5.5	......	.37	.16	.21	.70	.54	.16	.....	.....	3.3	17.	18.	......	....
548	" 26	" 28	VVH.	VH.	....	"	602.	291.	311.	15.7	8.6	3.	5.6	.016	.30	.09	.21	.70	.20	.50	.....	.....	3.	17.	19.	+	22,350
549	Nov. 2	Nov. 3	VVH.	VH.	....	"	692.	274.	418.	14.9	9.	3.3	5.7	.03	.32	.10	.22	.72	.16	.56	.01	.....	3.9	9.	2.	+	30,000
550	" 13	" 14	VVH.	M.	....	"	......	......	......	22.2	....	....	....	.068	.24	.14	.10	....	....	....	.005	.....	6.2	9.	14.	+	20,250
1126	" 23	" 24	VVH.	VH.	....	"	846.	290.	556.	14.7	12.	3.7	8.3	.02	.36	.06	.30	.86	.16	.70	.003	.20	6.2	11.	10.	+	47,000
1130	" 30	Dec. 1	VVH.	VH.	....	"	718.	293.	425.	17.0	9.	3.1	5.9	.03	.32	.08	.24	.74	.26	.48	.004	.30	5.5	8.	17.	+	53,500

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 190

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSOURI RIVER, FORT BELLEFONTAINE, WEST ALTON, MO.

Report of ADOLPH GEHRMANN,
D. B. BISBEE.
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.	Date of 1899 Examination.	Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
451	July 27	July 28	VVH.	VVH.	.05	None	3097.	224.	2873.	5.2	33.2	3.3	29.9	.01	1.20	.08	1.12	1.88	.20	1.68	.....	.60	13.3	29.	......	+	24,650
452	Aug. 2	Aug. 4	VVH.	VVH.	.05	"	3430.	......	......	5.3	36.5	3.3	33.2	.03	1.10	.12	.98	2.88	.12	2.76	.....	.70	12.4	29.	34.	+	771,750
453	" 10	" 12	VVH.	VVH.	.05	"	3243.	202.	3041.	5.7	30.6	1.	29.6	.03	.93	.08	.85	2.72	.52	2.20	.0	.40	11.6	27.	30.	+	38,250
454	" 17	" 18	VVH.	VVH.	....	"	2743.	199.	2544.	8.8	35.	3.4	31.6	.08	1.10	.12	.98	2.48	.14	2.34	.003	1.00	11.2	28.	35.	+	30,750
455	" 24	" 25	VVH.	VVH.	....	"	1898.	198.	1700.	10.6	34.8	3.2	31.6	.03	1.02	.15	.87	2.68	.25	2.43	.005	.70	9.2	28.	35.	+	36,250
456	" 31	Sept. 1	VVH.	VVH.	....	"	1468.	217.	1251.	8.1	19.6	....	....	......	.60	.10	.50	1.36	.14	1.22	.....	.80	8.3	28.	29.	+	17,000
457	Sept. 7	" 8	VVH.	VVH.	....	"	1153.	244.	909.	9.	14.8	2.7	12.1	......	.45	.13	.32	1.00	.30	.70	.....	.....	7.3	29.	34.	+	52,000
458	" 14	" 15	VVH.	VVH.	....	"	1243.	268.	975.	11.2	16.	3.1	12.9	......	.45	.09	.36	1.12	.26	.86	.....	.....	6.7	22.	27.	+	56,750
459	" 21	" 22	VVH.	VVH.	....	"	1114.	276.	838.	12.2	13.2	2.6	10.6	......	.46	.16	.30	.98	.32	.66	.....	.20	6.1	20.	22.	+	61,750
460	" 28	" 29	VVH.	VVH.	....	"	950.	292.	658.	14.1	10.6	2.4	8.2	.016	.41	.15	.26	1.02	.20	.82	.....	.....	5.5	18.	17.	+	60,750
461	Oct. 5	Oct. 6	VVH.	VVH.	....	"	......	......	......	15.3	10.6	2.2	8.4	......	.34	.08	.26	.86	.22	.46	.....	.....	5.	17.	21.	+	18,500
462	" 12	" 13	VVH.	VH.	....	"	819.	316.	503.	16.	8.6	1.7	6.9	......	.33	.11	.22	.98	.26	.72	.....	.80	4.8	22.	25.	+	31,500
463	" 19	" 20	VVH.	VH.	....	"	771.	324.	447.	17.6	8.8	2.1	6.7	......	.31	.11	.20	.70	.24	.46	.0	.....	4.6	18.	19.	+	18,500
464	" 26	" 27	VVH.	VH.	....	"	774.	314.	460.	17.6	7.6	2.	5.6	......	.24	.08	.16	.74	.24	.50	.....	.....	4.5	19.	23.	+	38,500
465	Nov. 2	Nov. 3	VVH.	VH.	....	"	807.	303.	504.	17.	8.	2.3	5.7	......	......	.08	......	.80	.18	.62	.....	.0	4.7	11.	0.	+	37,250
466	" 9	" 10	VVH.	VH.	....	"	699.	328.	371.	21.0	7.4	2.3	5.1	.016	.32	.11	.21	.72	.18	.54	....	.40	4.5	12.	23.	+	25,000
467	" 16	" 17	VVH.	VH.	....	"	676.	339.	337.	29.6	5.8	2.3	3.5	......	.22	.09	.13	.64	.14	.50	.....	.40	4.4	12.	19.	......	....
468	" 23	" 24	VVH.	VH.	....	"	952.	313.	639.	16.2	8.5	2.5	6.	.02	.37	.08	.29	.86	.20	.68	.....	.....	4.9	11.	10.	+	47,750
469	" 30	Dec. 1	VVH.	VH.	....	"	793.	330.	163.	17.7	8.2	2.	6.2	.04	.30	.08	.22	.82	.22	.60	.008	.30	5.	10.	17.	+	47,500

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 191.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 YARDS FROM ILLINOIS SHORE, JEFFERSON BARRACKS, MO.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
	1899 Collection.	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved.	By Suspd Matter.	Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dissolv'd	Albuminoid Am. Sus-pnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
850	July 14	July 17	VVH.	VVH.	.05	None	2556.	188.	2368.	3.7	48.4	9.3	39.1	.08	1.56	.18	1.38	3.68	.48	3.20	.....	.....	23.6	28.	......	+	49,000
836	" 21	" 24	VVH.	VVH.	.05	"	2017.	191.	1826.	4.9	34.4	7.4	27.	.08	1.18	.19	.99	2.00	.28	1.72	.006	.60	19.8	28.	......	—	10,250
853	" 27	" 28	VVH.	VVH.	.05	"	1690.	197.	1493.	5.6	28.	6.1	21.9	.02	.72	.16	.56	1.68	.24	1.44	.006	.50	16.2	30.	......	+	35,250
917	Aug. 3	Aug. 4	VVH.	VVH.	.05	"	1984.	211.	1773.	5.5	26.	5.1	20.9	.03	.80	.16	.64	2.00	.20	1.80	.....	.40	......	......	......	+	20,250
923	" 11	" 14	VVH.	VVH.	.05	"	2645.	199.	2446.	5.5	26.	3.6	22.4	.08	.95	.13	.82	2.36	.20	2.16	.....	.60	14.4	29.	......	—	27,750
919	" 17	" 18	VVH.	VVH.	....	"	1393.	178.	1215.	5.5	24.	5.5	18.5	.04	.70	.16	.54	1.48	.22	1.26	.007	.70	13.9	29.	......	—	....
912	" 25	" 25	VVH.	VH.	....	"	860.	186.	674.	6.1	18.4	5.1	13.3	.02	.60	.18	.42	1.58	.40	1.18	.008	.50	8.4	30.	......	—	25,250
905	" 31	Sept. 1	VVH.	H.	....	"	894.	215.	679.	6.4	16.4	4.8	11.6	......	.47	.14	.33	.88	....	....	.005	.40	7.5	30.	......	+	28,000
911	Sept. 8	" 9	VVH.	VH.	....	"	541.	196.	345.	6.4	10.	6.1	3.9	.024	.43	.22	.21	.80	.40	.40	.....	.36	6.3	30.	......	+	100,000
917	" 14	" 15	VVH.	VH.	....	"	410.	208.	202.	5.6	10.8	6.5	4.3	......	.40	.23	.17	.84	.40	.44	.....	.....	6.8	22.	......	+	52,000
923	" 22	" 23	VVH.	M.	....	"	349.	198.	151.	6.5	11.8	7.	4.8	......	.58	.24	.34	.88	.52	.36	.....	.0	6.7	19.	......	......	....
924	" 28	" 29	VVH.	M.	....	"	303.	182.	121.	6.1	11.2	7.2	4.	......	.49	.29	.20	.94	.30	.64	.....	.....	5.3	17.	......	+	25,750
930	Oct. 6	Oct. 7	VVH.	M.	....	"	......	......	......	5.8	12.6	8.7	3.9	......	.48	.26	.22	.86	.44	.42	.....	.....	4.1	16.	......	+	43,750
936	" 12	" 13	VVH.	M.	....	"	......	211.	......	6.8	11.6	7.3	4.3	......	.48	.33	.15	.78	.42	.36	.....	.....	3.5	20.	......	+	35,250
942	" 19	" 20	VVH.	M.	....	"	317.	204.	113.	9.2	11.	7.3	3.7	......	.46	.25	.21	1.10	.40	.70	.008	.....	3.2	19.	......	+	29,000
948	" 26	" 27	VVH.	H.	....	"	330.	202.	128.	8.6	10.2	6.9	3.3	......	.44	.23	.21	.86	.32	.54	.006	.0	2.8	19.	......	+	38,000
941	Nov. 3	Nov. 4	VVH.	H.	....	"	323.	211.	112.	8.7	10.	6.3	3.7	.03	.44	.24	.20	.84	.30	.54	.....	.....	4.	9.	......	+	27,250
955	" 11	" 13	VVH.	M.	....	"	293.	179.	114.	6.4	12.	9.1	2.9	.04	.42	.26	.16	....	....	....	.08	.40	5.4	9.	......	+	15,750
1481	" 16	" 17	VVH.	S.	....	"	213.	153.	60.	7.8	15.2	12.6	2.6	......	.52	.25	.27	.98	.52	.46	.014	.50	6.5	10.	......	+	25,500
1482	" 23	" 24	VVH.	M.	....	"	265.	168.	97.	8.6	16.4	12.6	3.8	.06	.53	.29	.24	1.00	.50	.50	.008	.26	6.6	12.	......	+	34,000
1488	" 30	Dec. 2	VH.	MH.	....	"	233.	172.	61.	8.1	14.2	11.6	2.6	.13	.38	.21	.17	.90	.64	.26	.....	.....	5.6	9.	......	+	15,750

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 192.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, EAST OF MIDSTREAM, JEFFERSON BARRACKS, MO.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of: 1899 Collection.	1899 Examination.	Appearance: Turb'y.	Sediment.	Color.	Odor	Residue on Evaporation: Total.	Dissolved.	Suspended	Chlorine.	Oxygen Consumed: Total.	By Dissolved.	By Suspd Matter.	Nitrogen as Ammonia: Free Ammonia.	Albuminoid Am.: Tot'l	Dis-solv'd	Sus-pnd'd	Organic Nitrogen: Total.	Dissolved.	Suspended	Nitrogen as: Nitrites	Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
916	Aug. 3	Aug. 4	VVH.	VVH.	.05	None	2463.	229.	2234.	5.3	26.	5.	21.	.02	.90	.16	.74	2.08	.28	1.80	.....	.50	14.3	32.	......	+	23,500
922	" 11	" 14	VVH.	VVH.	.05	"	2289.	196.	2093.	4.7	23.8	4.5	19.3	.04	.90	.13	.77	1.88	.20	1.68	.....	.50	14.4	29.	......	+	46,000
918	" 17	" 18	VVH.	VVH.	....	"	1367.	166.	1201.	5.4	24.4	5.3	19.1	.04	......	......	......	1.48	.20	1.28	.006	.55	13.9	29.	......	......	....
911	" 25	" 25	VVH.	VVH.	....	"	1077.	182.	895.	6.1	25.2	5.7	19.5	.02	.74	.20	.54	1.68	.34	1.34	.008	.60	8.4	30.	......	+	32,000
904	" 31	Sept. 1	VVH.	VH.	....	"	973.	221.	752.	6.8	15.6	4.6	11.0	......	.50	.16	.34	1.08	.24	.84	.006	.40	7.5	30.	......	—	29,000
910	Sept. 8	" 9	VVH.	VH.	....	"	657.	207.	450.	6.6	11.6	5.9	5.7	.024	.43	.21	.22	1.06	.36	.70	.....	.40	6.3	30.	......	+	112,000
916	" 14	" 15	VVH.	VH.	....	"	494.	197.	297.	5.7	11.6	6.2	5.4	......	.50	.20	.30	1.20	.44	.76	.....	.....	6.8	22.	......	+	45,500
922	" 22	" 23	VVH.	M.	....	"	483.	206.	277.	6.9	12.	6.6	5.4	......	.54	.21	.33	....	.48	....	.....	.10	6.7	19.	......	+	....
923	" 28	" 29	VVH.	H.	....	"	366.	179.	187.	6.2	12.	7.	5.	......	.50	.22	.28	.96	.42	.54	.025	.....	5.3	17.	......	+	20,000
929	Oct. 6	Oct. 7	VVH.	H.	....	"	......	......	......	5.8	13.	8.5	4.5	......	.50	.30	.20	.86	.38	.48	.....	.....	4.1	16.	......	+	19,500
935	" 12	" 13	VVH.	H.	....	"	360.	201.	156.	7.2	11.2	7.3	3.9	......	.46	.23	.23	.86	.40	.46	.....	.....	3.5	20.	......	+	34,750
941	" 19	" 20	VVH.	H.	....	"	382.	204.	178.	9.4	11.4	6.8	4.6	......	.47	.24	.23	1.06	.38	.68	.006	.....	3.2	19.	......	+	23,500
947	" 26	" 27	VVH.	H.	....	"	362.	208.	154.	9.1	10.2	6.5	3.7	......	.41	.22	.19	.86	.32	.54	.004	.0	2.8	19.	......	+	26,250
940	Nov. 3	Nov. 4	VVH.	H.	....	"	359.	205.	154.	8.4	9.8	6.5	3.3	.03	.46	.25	.21	.82	.46	.36	.....	.....	4.	9.	......	+	12,000
954	" 11	" 13	VVH.	H.	....	"	331.	185.	146.	6.3	12.2	9.	3.2	.04	.42	.27	.15	....	....	....	.01	.35	5.4	9.	......	+	10,250
1480	" 13	" 17	VVH.	M.	....	"	227.	157.	70.	8.	15.4	12.8	2.6	.016	.52	.26	.26	.94	.54	.40	.014	.....	6.5	10.	......	+	27,500
1481	" 23	" 24	VVH.	H.	....	"	284.	164.	120.	8.	16.6	13.	3.6	.02	.50	.28	.22	1.20	.48	.72	.006	.20	6.6	12.	......	+	32,750
1487	" 30	Dec. 2	VH.	H.	....	"	268.	182.	86.	8.2	14.	10.9	3.1	.12	.38	.20	.18	.86	.56	.30	.....	.....	5.6	9.	......	+	32,000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 193.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, MIDSTREAM, JEFFERSON BARRACKS, MO.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
	1899 Collection.	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved.	By Suspd Matter.	Free Ammonia.	Albuminoid Am. Tot'l	Albuminoid Am. Dis-solv'd	Albuminoid Am. Sus-pnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
844	July 14	July 17	VVH.	VVH.	.05	None	2871.	199.	2672.	3.8	50.8	8.7	42.1	.08	1.76	.17	1.59	3.88	.36	3.52	.....	.....	23.6	28.	......	+	52,650
833	" 21	" 24	VVH.	VVH.	.05	"	2452.	......	......	5.0	36.	6.9	29.1	.08	1.25	.24	1.01	2.32	.28	2.04	.006	.60	19.8	28.	......	+	30,650
859	" 27	" 28	VVH.	VVH.	.05	"	1927.	222.	1705.	5.6	27.6	5.6	22.	.02	.76	.13	.63	1.76	.20	1.56	.006	.30	16.2	30.	......	+	14,250
915	Aug. 3	Aug. 4	VVH.	VVH.	.05	"	2489.	224.	2265.	5.5	28.	4.9	23.1	.02	.87	.16	.71	2.48	.20	2.28	.002	.50	14.3	32.	......	—	20,500
921	" 11	" 14	VVH.	VVH.	.05	"	1551.	177.	1374.	4.	21.	5.5	15.5	.08	.80	.22	.58	1.40	.26	1.14	.....	.50	14.4	29.	......	+	48,750
917	" 17	" 18	VVH.	VVH.	....	"	1679.	186.	1493.	5.9	26.8	5.	21.8	.04	......	......	......	1.88	.20	1.68	.005	.80	13.9	29.	......	.....	......
911	" 25	" 25	VVH.	VVH.	....	"	1077.	182.	895.	6.1	25.2	5.7	19.5	.02	.74	.20	.54	1.68	.34	1.34	.008	.60	8.4	30.	......	+	29,750
903	" 31	Sept. 1	VVH.	VVH.	....	"	1065.	224.	841.	6.8	16.8	4.4	12.4	......	.50	.18	.32	1.28	....	....	.005	.50	7.5	30.	......	—	10,000
909	Sept. 8	" 9	VVH.	VH.	....	"	818.	218.	600.	6.9	16.	5.4	10.6	.024	.47	.20	.27	.80	.36	.44	.....	.40	6.3	30.	......	+	76,000
915	" 14	" 15	VVH.	VVH.	....	"	789.	229.	560.	7.8	13.6	5.	8.6	......	.48	.16	.32	1.30	.44	.86	.....	.....	6.8	22.	......	+	54,250
921	" 22	" 23	VVH.	VH.	....	"	681.	233.	448.	7.9	13.	5.8	7.2	......	.48	.20	.28	.88	.50	.38	.....	.60	6.7	19.	......	+	......
922	" 28	" 29	VVH.	VH.	....	"	505.	195.	310.	7.4	11.8	6.3	5.5	......	.46	.20	.26	.98	.40	.58	.026	.....	5.3	17.	......	—	16,350
928	Oct. 6	Oct. 7	VVH.	VH.	....	"	......	......	......	10.	12.	6.1	5.9	......	.46	.22	.24	.86	.34	.52	.....	.....	4.1	16.	......	+	23,750
934	" 12	" 13	VVH.	VH.	....	"	489.	227.	262.	8.6	11.2	6.	5.2	......	.45	.21	.24	.74	.36	.38	.....	.....	3.5	20.	......	+	12,250
940	" 19	" 20	VVH.	VH.	....	"	490.	222.	268.	10.6	11.	5.8	5.2	......	.44	.21	.23	1.14	.32	.82	.008	.....	3.2	19.	......	+	30,250
946	" 26	" 27	VVH.	VH.	....	"	525.	250.	275.	10.7	9.8	5.2	4.6	......	.39	.16	.23	.74	.28	.46	.008	.0	2.8	19.	......	+	22,000
939	Nov. 3	Nov. 4	VVH.	VH.	....	"	470.	228.	242.	9.8	9.6	5.4	4.2	.03	.41	.20	.21	.86	.28	.58	.....	.....	4.	9.	......	+	26,000
953	" 11	" 13	VVH.	VH.	....	"	367.	206.	161.	6.8	12.2	8.5	3.7	.048	.38	.24	.14	....	....	....	.007	.85	5.4	9.	......	+	14,250
1479	" 16	" 17	VVH.	M.	....	"	262.	159.	103.	7.8	15.4	13.2	2.2	.016	.52	.26	.26	.98	.56	.42	.014	.10	6.5	10.	......	+	35,000
1480	" 23	" 24	VVH.	H.	....	"	352.	177.	175.	7.1	15.6	....	....	.02	.36	.21	.15	.76	.42	.34	.003	.20	6.6	12.	......	+	28,000
1486	" 30	Dec. 2	VVH.	VH.	....	"	429.	239.	190.	10.5	12.4	8.6	3.8	.07	.33	.16	.17	.82	.46	.36	.....	.....	5.6	9.	......	+	18,750

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 194.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

SOURCE OF WATER—MISSISSIPPI RIVER, WEST OF MIDSTREAM, JEFFERSON BARRACKS, MO.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
															Albuminoid Am.												
	1899 Collection.	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved.	By Suspd Matter.	Free Ammonia.	Tot'l	Dissolv'd	Suspnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
914	Aug. 3	Aug. 4	VVH.	VVH.	.05	None	2762.	225.	2537.	5.3	29.5	4.1	25.4	.02	.90	.16	.74	2.48	.20	2.28	.....	.60	14.3	32.	......	—	63,000
920	" 11	" 14	"	"	.05	"	2480.	204.	2276.	5.2	25.0	3.8	21.2	.04	.93	.13	.80	2.28	.20	2.08	.015	.49	14.4	29.	......	—	52,250
913	" 17	" 18	"	"	....	"	2112.	188.	1924.	7.4	31.2	4.2	27.	.04	1.05	.18	.87	2.48	.16	2.32	.005	1.00	13.9	29.	......	+	....
909	" 25	" 25	"	"	....	"	1487.	196.	1291.	6.1	29.6	4.5	25.1	.02	1.00	.16	.84	2.08	.32	1.76	.008	.60	8.4	30.	......	+	41,750
902	" 31	Sept. 1	"	"	....	"	1124.	208.	916.	7.3	17.2	4.	13.2	......	.55	.18	.37	1.24	.28	.96	.005	.80	7.5	30.	......	+	22,500
905	Sept. 8	" 9	"	"	....	"	890.	232.	658.	7.7	13.2	6.3	6.9	.024	.45	.14	.31	1.10	.28	.82	.....	.36	6.3	30.	......	+	121,350
914	" 14	" 15	"	"	....	"	956.	237.	719.	9.4	14.	4.5	9.5	......	.50	.14	.36	1.50	.44	1.06	.....	......	6.8	22.	......	—	34,000
920	" 22	" 23	"	"	....	"	808.	245.	563.	9.6	13.	4.8	8.2	......	.50	.16	.34	.92	.36	.56	.....	.20	6.7	19.	......	—	....
921	" 28	" 29	"	"	....	"	693.	339.	354.	9.7	11.	5.	6.	......	.44	.16	.28	.92	.32	.60	.022	.....	5.3	17.	......	+	31,650
927	Oct. 6	Oct. 7	"	"	....	"	......	......	......	12.4	11.6	4.8	6.8	......	.45	.21	.24	.86	.40	.46	.....	.....	4.1	16.	......	+	19,250
933	" 12	" 13	"	VH.	....	"	681.	270.	411.	12.3	10.4	4.3	6.1	......	.41	.20	.21	.86	.38	.48	.....	.....	3.5	20.	......	+	28,000
939	" 19	" 20	"	"	....	"	630.	249.	381.	13.4	10.4	4.7	5.7	......	.45	.16	.29	1.14	.28	.86	.006	.....	3.2	19.	......	+	76,650
944	" 26	" 27	"	"	....	"	594.	262.	332.	12.7	8.8	4.4	4.4	......	.38	.16	.22	.74	.28	.46	.012	.0	2.8	19.	......	+	32,250
938	Nov. 3	Nov. 4	"	"	....	"	621.	259.	362.	12.4	9.2	4.6	4.6	.02	.36	.19	.17	.78	.30	.48	.....	.....	4.	9.	......	+	48,250
952	" 11	" 13	"	"	....	"	509.	251.	255.	13.9	9.4	5.3	4.1	.018	.34	.16	.18	....	....	....	.007	.30	5.4	9.	......	+	19,500
1478	" 16	" 17	"	M.	....	"	274.	152.	122.	7.6	15.6	12.8	2.8	.016	.52	.26	.26	.92	.54	.38	.012	.65	6.5	10.	......	+	22,750
1479	" 23	" 24	"	VH.	....	"	575.	243.	332.	11.4	12.	7.4	4.6	.02	.35	.13	.22	.90	.36	.54	.....	.20	6.6	12.	......	+	40,750
1485	" 30	Dec. 2	"	"	....	"	537.	264.	273.	13.4	11.	6.6	4.4	.04	.33	.12	.21	.90	.38	.52	.....	.....	5.6	9.	......	+	26,000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 195.

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—MISSISSIPPI RIVER, 100 YARDS FROM MISSOURI SHORE, JEFFERSON BARRACKS, MO.

Report of ADOLPH GEHRMANN,
D. B. BISBEE,
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of 1899 Collection.		Date of 1899 Examination.		Appearance. Turb'y.	Appearance. Sediment.	Appearance. Color.	Odor	Residue on Evaporation. Total.	Residue on Evaporation. Dissolved.	Residue on Evaporation. Suspended.	Chlorine.	Oxygen Consumed. Total.	Oxygen Consumed. By Dissolved.	Oxygen Consumed. By Suspd Matter.	Nitrogen as Ammonia. Free Ammonia.	Nitrogen as Ammonia. Albuminoid Am. Tot'l	Nitrogen as Ammonia. Albuminoid Am. Dissolv'd	Nitrogen as Ammonia. Albuminoid Am. Suspnd'd	Organic Nitrogen. Total.	Organic Nitrogen. Dissolved.	Organic Nitrogen. Suspended	Nitrogen as Nitrites	Nitrogen as Nitrates	Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coli.	No. of Bac. per Cubic Centimeter.
840	July	14	July	17	VVH.	VVH.	.05	None	3090.	198.	2892.	4.2	52.4	8.7	43.7	.08	1.80	.17	1.63	3.68	.28	3.40	.....	.....	23.6	28	.....	+	53,000
828	"	21	"	24	"	"	.05	"	2661.	208.	2453.	5.8	38.	6.	32.	.08	1.20	.19	1.01	2.40	.28	2.12	.006	.60	19.8	28	.....	.....	....
865	"	27	"	28	"	"	.05	"	2444.	202.	2242.	5.9	29.6	4.7	24.9	.02	.86	.12	.74	1.68	.20	1.48	.....	.70	16.2	30	.....	+	10,500
913	Aug.	3	Aug.	4	"	"	.05	"	2760.	242.	2518.	5.4	32.	3.8	28.2	.02	1.15	.18	.97	2.80	.20	2.60	.0	.60	14.3	32	.....	—	67,000
919	"	11	"	14	"	"	.05	"	1255.	156.	1099.	4.6	19.4	6.1	13.3	.08	.93	.23	.70	1.40	.36	1.04	.03	.47	14.4	29	.....	+	45.750
912	"	17	"	18	"	"	....	"	2178.	181.	1997.	7.9	33.5	4.1	29.4	.04	1.10	.15	.95	2.68	.12	2.56	.004	.85	13.9	29	.....	.....	....
908	"	25	"	25	"	"	....	"	1555.	196.	1359.	7.1	28.4	4.2	24.2	.02	1.05	.15	.90	2.08	.32	1.76	.009	.50	8.4	30	.....	—	59.000
901	"	31	Sept.	1	"	"	....	"	1177.	227.	950.	7.5	17.6	4.	13.6	......	.45	.18	.27	1.24	.32	.92	.004	.80	7.5	30	.....	+	30,000
907	Sept.	8	"	9	"	"	....	"	906.	224.	682.	8.4	13.2	5.9	7.3	.024	.42	.15	.27	.96	.28	.68	.....	.40	6.3	30	.....	—	134,500
913	"	14	"	15	"	"	....	"	953.	238.	715.	9.5	13.6	4.4	9.2	......	.50	.13	.37	1.40	.50	.90	.....	.....	6.8	22	.....	+	51.200
919	"	22	"	23	"	"	....	"	818.	247.	571.	10.	12.6	4.4	8.2	......	.42	.16	.26	1.02	.34	.68	.....	.90	6.7	19	.....	+	....
920	"	28	"	29	"	VH.	....	"	708.	239.	469.	10.4	11.8	4.9	6.9	......	.44	.15	.29	.94	.28	.66	.022	.....	5.3	17	.....	—	20,650
926	Oct.	6	Oct.	7	"	"	....	"	......	......	......	11.1	11.8	5.1	6.7	......	.44	.21	.23	.86	.30	.56	.....	.....	4.1	16	.....	—	23,250
932	"	12	"	13	"	"	....	"	663.	274.	389.	11.7	10.6	4.4	6.2	......	.43	.19	.24	.86	.38	.48	.....	.....	3.5	20	.....	+	24,750
938	"	19	"	20	"	"	....	"	627.	260.	367.	13.6	10.2	4.5	5.7	......	.43	.16	.27	1.02	.26	.76	.008	.....	3.2	19	.....	+	39,500
464	"	26	"	27	"	"	....	"	774.	314.	460.	17.6	7.6	2.	5.6	......	.24	.08	.16	.74	.24	.50	.....	.....	2.8	19	.....	+	40,665
937	Nov.	3	Nov.	4	"	"	....	"	646.	263.	383.	13.	9.2	4.	5.2	.02	.43	.18	.25	.86	.32	.54	.....	.....	4.	9	.....	+	42,000
951	"	11	"	13	"	"	....	"	529.	263.	266.	15.3	9.4	5.	4.4	.056	.33	.16	.17	....	....	....	.007	.60	5.4	9	.....	+	25,750
1477	"	16	"	17	"	M.	....	"	489.	267.	222.	20.6	10.8	6.5	4.3	.052	.32	.13	.19	.58	.30	.28	.005	.20	6.5	10	.....	+	30,000
1478	"	23	"	24	"	VH.	....	"	627.	262.	365.	13.4	11.2	6.4	4.8	.06	.34	.12	.22	.78	.30	.48	.006	.20	6.6	12	.....	+	48,500
1484	"	30	Dec.	1	"	"	....	"	565.	277.	288.	13.6	10.4	5.7	4.7	.05	.33	.11	.22	.98	.38	.60	.....	.....	5.6	9	.....	+	10,000

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very. Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.

TABLE 196

STREAMS EXAMINATION—SANITARY DISTRICT OF CHICAGO.

SANITARY WATER ANALYSIS—PARTS PER MILLION.

SOURCE OF WATER—ST. LOUIS, MO., TAP WATER.

Report of ADOLPH GEHRMANN.
D. B. BISBEE.
Municipal Laboratory, Chicago, Ill.

Serial No.	Date of		Appearance.			Odor	Residue on Evaporation.			Chlorine.	Oxygen Consumed.			Nitrogen as Ammonia.				Organic Nitrogen.			Nitrogen as		Height of Water.	Temperature of Water, C.	Temperature of Air, C.	Presence or Abs. of Coll.	No. of Bac. per Cubic Centimeter.
	1899 Collection.	1899 Examination.	Turb'y.	Sediment.	Color.		Total.	Dissolved.	Suspended		Total.	By Dissolved	By Suspd Matter	Free Ammonia.	Albuminoid Am Tot'l	Albuminoid Am Dissolv'd	Albuminoid Am Suspnd'd	Total.	Dissolved.	Suspended	Nitrites	Nitrates					
918	Aug. 3	Aug. 4	VVH.	M.	.05	None	350.	213.	137.	4.8	5.4	4.5	.9	.02	.20	.16	.04	.36	.18	.18	....	.70	....	....	....	—	9,500
924	" 11	" 14	....	....	....	....	295	215.	80.	5.6	5.	4.8	.2	.04	.16	.12	.04	.38	.32	.06	....	.50	....	....	....	—	19,750
920	" 17	" 18	VVH.	VS.	....	None	108.	195.	213.	5.6	6.1	4.	2.1	.0	.20	.12	.08	.44	.16	.28	.007	.80	....	....	....	—	....
913	" 25	" 25	"	S.	....	"	345.	191	151.	6.	7.2	4.6	2.6	.02	.18	.143	.037	.48	.46	.02	.004	.60	....	....	....	—	35,000
906	" 31	Sept. 1	"	S.	....	"	289.	217.	72.	6.7	6.8	3.8	3.0	....	.18	.15	.03	.68	....	....	.005	.70	....	....	....	+	10,000
912	Sept. 8	" 9	"	VS.	....	"	309.	211.	98.	7.2	4.8	4.3	.5	.024	.17	.18	....	.38	.30	.08	....	.50	....	....	....	—	40,000
918	" 14	" 15	"	"	....	"	289.	241.	45.	8.	3.8	3.5	.3	....	.20	.14	.06	.40	.36	.04	....	....	....	....	....	+	39,000
924	" 22	" 23	"	"	....	"	312.	251.	61.	9.2	4.	4.	....	....	.17	.14	.03	.36	....	....	....	.40	....	....	....	—	....
925	" 28	" 29	"	"	....	"	182.	131.	51.	9.6	4.	3.8	.2	....	.17	.17	....	.42	.22	.20	.007	....	....	....	....	+	25,250
931	Oct. 6	Oct. 7	"	"	....	"	....	....	....	11.4	4.3	3.7	.6	....	.19	.16	.03	.34	.30	.04	....	....	....	....	....	....	....
937	" 12	" 13	"	"	....	"	....	263.	....	12.6	....	3.3	....	....	.14	.14	....	.30	.24	.06	....	....	....	....	....	—	17,500
943	" 19	" 20	"	"	....	"	316.	278.	38.	13.8	4.	3.5	.5	....	.16	.15	.01	.32	.34	....	.005	....	....	....	....	—	27,250
949	" 26	" 27	"	"	....	"	340	281.	56	14.4	3.7	3.3	.4	....	.14	.14	....	.36	.26	.10	.006	.0	....	....	....	+	7,250
942	Nov. 3	Nov. 4	"	"	....	"	323	292.	31.	14.5	3.3	3.2	.1	....	.14	.12	.02	.30	.20	.10	....	....	....	....	....	+	17,750
956	" 11	" 13	"	"	....	"	334.	262.	72.	14.0	4.2	3.4	.8	....	.16	.14	.02	....	....	....	....	.25	....	....	....	+	14,000
1482	" 16	" 17	"	"	....	"	314.	260.	54.	17.	4.5	4.1	.4	....	.15	.11	.04	.32	.32	....	....	.40	....	....	....	+	22,750
1483	" 23	" 24	"	"	....	"	300.	257.	43.	15.6	5.8	5.1	.7	....	.14	.13	.01	.38	.30	.08	.0	.14	....	....	....	+	20,500
1489	" 30	Dec. 2	"	"	....	"	305	262.	43.	14.4	6.	5.6	.4	.0	.13	.11	.02	.40	.32	.08	....	....	....	....	....	+	179,350
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

APPEARANCE—H., Heavy. VH., Very Heavy. VVH., Very, Very Heavy. S., Slight. VS., Very Slight. VVS., Very, Very Slight. M., Medium.